

# **MONTEREY BOARD OFFICES**

## **Feasibility Design Study**



**January 7, 2015**

**For:**

Louis Riel School Division

**Prepared By:**

Number Ten Architectural Group

**With:**

SMS Engineering Ltd.

Hanscomb Consultants Ltd.

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## 1.0 INTRODUCTION

### 1.1 Study Background

Number TEN Architectural Group was engaged by the Louis Riel School Division (LRSD) to undertake a feasibility study to convert the Monterey Board Offices into a Grade 7-8 Middle School. Constructed in 1968 as an open-concept elementary school, the building was changed shortly thereafter to an office use for LRSD facility and resource services staff. The intent of the study is to explore the feasibility of transforming the building back into a school suitable for up to 300 students who would come from College Beliveau.

The firm of Number Ten Architectural Group led the study team and was responsible for developing the building concept designs. The firm of SMS Engineering Ltd. was engaged by Number Ten to review the existing mechanical and electrical systems to confirm the extent of upgrade/replacement required to meet current standards. Hanscomb Consultants Ltd. was responsible for preparing a Class 'D' estimate of probable construction costs based on the scope of work outlined by Number Ten and SMS.

The work of the study was carried out by Margot Colquhoun, MAA, for Number Ten; Helmut Waedt, P. Eng. (Mechanical) and Andre Garand (Electrical) for SMS; and, Isaac Gwendo, PQS, for Hanscomb, with assistance from technical staff as required.

### 1.2 Methodology

Margot Colquhoun met with Brad Fulton, Secretary-Treasurer LRSD, and Christian Michalik, Assistant Superintendent LRSD, to confirm the scope of work and to discuss the direction of the study. Four schematic design plans were prepared along with building programs based on current Public Schools Finance Board (PSFB) space standards for a Grade 7-8 school for 200, 250 and 300 students. The designs were presented to Mr. Fulton and Mr. Michalik as well as to Gilles Mousseau and Paula Meyer, Principal and Vice-Principal of College Beliveau respectively. LRSD approved Option D to form the basis of the feasibility report. Option D is a proposed plan for a 300 student school including a new gymnasium addition.

The study team visited Monterey School to review the existing building systems and a visual examination of the building was carried out. Original building blueprints were made available to the team and were used as the basis of understanding as to the existing architectural, mechanical and electrical building systems. Number Ten also confirmed as-built architectural elements in order to prepare a base floor plan in AutoCAD. Drawings illustrating the proposed Option D are included herein (see Appendix A – Drawings). Photographs were taken to illustrate conditions observed (see Appendix B – Photographs).

A review of the 2011 Manitoba Building Code was undertaken to identify construction requirements, exit and early warning system requirements, washroom facility requirements and accessibility requirements. A code summary was prepared (see Appendix C – Building Code Summary).

### 1.3 Study Limitations

As noted above, the examination of the existing building systems was carried out through visual observation. No destructive tests were done to determine existing conditions within construction assemblies and a structural investigation was not part of the scope of services. Such testing procedures may be required, together with a structural engineering analysis, to more accurately assess the condition of the building's supporting framework.

Further, no testing was done to determine the presence of hazardous materials. The mechanical report herein notes that the use of asbestos in mechanical system pipe insulation was common at the time of construction and may be present. Therefore, a detailed hazardous material assessment is recommended prior to undertaking any building alterations or demolition.

### 1.4 Estimated Costs

A Class 'D' estimate of probable construction costs was prepared by Hanscomb Consultants Ltd. (see Appendix E – Class 'D' Cost Estimate). This is an order-of-magnitude estimate only which will allow LRSD to begin a discussion with PSFB.

Due to the renovation nature of the work and the high-level detail of the scope of work set out, a design and pricing contingency of 15% has been carried to cover design and pricing unknowns. A 1.5% escalation contingency to June 2015 is also carried.

All costs are expressed in current dollars and are inclusive of general contractor's general conditions, overhead and profit. GST, professional fees and other soft costs as noted are excluded from the cost estimate.

It is recommended that the design of the preferred option be further advanced in order to set a project budget based on a more well-defined scope of work.

## 2.0 ARCHITECTURAL REPORT

### 2.1 Overview

The Monterey Board Offices building was constructed in 1968 as an open-concept elementary school named Monterey School (Monterey). Converted in the 1970's for use by Louis Riel School Division (LRSD) facility and resource services staff, the building has undergone minor upgrades over the intervening years including the division of the open classroom space into multiple smaller rooms and offices. LRSD is currently exploring opportunities to resolve an overcrowding situation at College Beliveau (Beliveau), a grade 7-12 school located a few blocks from Monterey. The intent of this study is to investigate the feasibility of transforming Monterey back into a middle school suitable for up to 300 Grade 7-8 students who would come from Beliveau.

The original structure appears to be sound and the use of durable construction materials at the outset has resulted in a substantial building that has many more years of life remaining. For instance, the exterior Tyndall Stone veneer and interior terrazzo flooring and concrete block partitions are in very good condition and would require minimal restoration work if the building was re-used as a school. However, as per the mechanical and electrical building report herein, it is recommended that the existing mechanical and electrical systems be replaced given the age and limited life expectancy of the existing equipment.

The initial review determined that 200 students could be accommodated within the existing Monterey building footprint with the understanding that the gym is significantly undersized by PSFB standards and that the Beliveau gym would likely need to be used periodically. Further, 250 students could be accommodated if the school was a satellite to Beliveau where science and band functions would remain and the gym might be needed periodically. Finally, 300 students could be accommodated in the existing footprint if the existing undersized gym was repurposed and the Beliveau gym remained as the sole gym for the school. Given these options, LRSD decided that, for the purposes of this study, the basis of design and costing would be a fourth option i.e. alterations to the existing building and a gymnasium addition to accommodate 300 students in a stand-alone school.

The schematic design for the proposed school is illustrated in Appendix A – Drawings. The new school would meet the current code for barrier-free access. A gym addition, complete with change rooms, office, storage and mezzanine-level mechanical/electrical room is proposed to be constructed at the southwest end of the building. The gym wing is connected to the existing school with a link comprised of a new public entry foyer and the south portion of the multi-purpose room. The construction materials for the addition match the quality of the existing building materials with concrete block walls throughout. Alterations to the existing building include a new roof and skylights with added insulation to improve energy performance and cleaned and repointed exterior masonry. The original school had minimal window fenestration which is contrary to current

school design principles where access to daylight is promoted for its benefits to student and staff health. Therefore, natural light will be introduced into the new classrooms and ancillary spaces with aluminum windows in new openings in the exterior walls. New partition walls will be constructed of steel stud framing and gypsum board complete with sound insulation at teaching spaces to provide adequate acoustic performance. Washrooms will be reconfigured, refitted and finished to suit the new occupant load and floor, wall and ceiling finishes will be replaced throughout.

The estimated probable cost of construction is \$10,355,400 including \$4,755,600 for the addition and \$5,599,800 for the alterations to the existing building (see Appendix E - Class 'D' Cost Estimate).

## 2.2 Scope of Work

### 1. Demolition

#### Exterior:

- a. Remove wall assembly to suit new addition connection;
- b. Remove aluminum windows in classroom wing (4'-0" w x 4-8" h);
- c. Remove exterior man doors at south side of classroom wing;
- d. Cut openings in walls for new windows as indicated;
- e. Remove existing roofing membrane and insulation to top of steel deck;
- f. Remove existing cant strip and flashing in preparation for new parapet;
- g. Remove existing skylights;
- h. Cut openings in roof to suit new skylights;
- i. Remove guardrail at west side of main entrance landing at top of new ramp;
- j. Clean Tyndall stone brick face;
- k. Re-caulk all exterior building joints.

#### Interior:

- l. Demolish interior partition walls, doors and frames as shown;
- m. Remove and replace existing doors typical;
- n. Demolish suspended ceilings throughout;
- o. Remove existing carpet and vinyl floor tiles (VAT) throughout;
- p. Demolish existing washroom fixtures;
- q. Remove existing millwork;
- r. Remove existing interior vestibule doors and sidelites (two assemblies total).

### 2. Addition

- a. Construct a new gymnasium addition complete with change rooms, instructor's office, storage and a mechanical mezzanine.
- b. Construct a link to connect the existing building and the gymnasium wing including a public entrance foyer and additional Multi-Purpose Room floor area.

- c. Construction Details:
  - i. Structural reinforced concrete slab on grade beams and piles;
  - ii. Loadbearing concrete block walls complete with insulated cavity and limestone brick face at bottom and stucco face at top of exterior walls.
  - iii. Steel roof framing;
  - iv. Interior partitions to be 8" concrete block typical with 6" concrete block walls at change room entries and interior dividers;
  - v. Windows to be aluminum complete with thermally broken frames and double pane sealed glazing units;
  - vi. Foyer exterior entry to be aluminum framed entrance and storefront framing.
  - vii. Exterior man doors to be insulated steel in pressed steel frames complete with institutional hardware;
  - viii. Interior doors to be hollow metal in pressed steel frames complete with institutional duty hardware typical. Fire-rated doors complete with a self-closing devices are required at the mechanical mezzanine;
  - ix. Sheet vinyl flooring in the Multi-Purpose room, foyer, gym office and storage.
  - x. Sheet vinyl safety flooring in change rooms.
  - xi. Rubber sport flooring in gymnasium.
  - xii. Tectum panels at upper walls of gymnasium.
- d. Exterior Landscaping:
  - i. Construct a new ramp at the existing main north entrance complete with painted galvanized steel handrails and planting beds of split face block retaining walls and caps;
  - ii. Modify concrete sidewalk to suit new ramp.
  - iii. Plaza at new west entrance to be constructed of concrete slab on grade with decorative paver banding and planting beds.

### 3. Alterations

- a. Reconstruct the roof assembly complete with new sheathing, insulation and membrane.
- b. Construct new parapets and curbs to suit thicker insulation layers at perimeter of roof and at skylights.
- c. Construct new partition walls as shown to underside of floor deck above typical.
  - i. To be constructed of 5/8" gypsum board both sides of 3 5/8" metal studs typical (complete with resilient channels and batt insulation at instructional spaces);
  - ii. Patch and make good openings in existing masonry walls to match existing.
- d. Supply and install a new drop ceilings:
  - i. Suspended acoustic ceiling panel ceiling system at instructional spaces and administrative areas;

- ii. Gypsum wallboard on metal furring channels at washrooms, grooming room, kitchen, service rooms and storage rooms.
- e. Exposed structure at School Commons and in main corridors of existing building – to be painted.
- f. New windows to be aluminum complete with thermally broken frames and double pane sealed glazing units.
- g. New and replacement doors to be solid core wood in pressed steel frames complete with institutional duty hardware typical. Fire-rated doors complete with a self-closing devices are required at the Janitor and service rooms;
- h. Replace existing flooring with sheet vinyl in the School Commons, classrooms, Band, preparation/work rooms, washrooms, janitor's room and storage rooms;
- i. Replace existing flooring with sheet vinyl safety flooring in the Kitchen and Grooming room.
- j. Replace existing flooring with carpet tile in the administrative areas, meeting room, staff room and Library Resource Centre;
- k. Construct a grooming room to meet PSFB standards as well as the Universal Toilet Room requirements of MBC 2011 including accessible fixtures, fittings and accessories;
- l. Renovate existing washrooms complete with new finishes, fixtures, fittings and accessories;
- m. Construct new staff washrooms (3 total) as shown;
- n. Construct a janitor's closet at east side complete with a mop sink, shelving and mop hooks. Janitor's room requires a fire separation with a minimum 45 minute fire-resistance rating;
- o. Walls and gypsum board ceilings to be primed and painted with two coats of acrylic latex coating.
- p. Allow for new millwork in the staff room, work room, kitchen, grooming room, library, multi-purpose room, classrooms and science preparation.
- q. Mechanical upgrades: replace existing HVAC system (see SMS report).
- r. Electrical upgrades including: replace electrical distribution and life safety systems (see SMS report).

### 2.3 Program

The following program indicates the proposed allocation of space to meet the PSFB standards.

PROGRAM SUMMARY - OPTION D  
Grades 7-8 for 300 STUDENTS

PROGRAM SPACES		NET AREAS								COMMENTS
Room Name	# Rooms	PSFB Program		PSFB Total Net		Existing + Addition Total Net		Variance		
		sf	sm	sf	sm	sf	sm	sf	sm	
Classrooms	9	860	80	7,740	719	7,497	696	-243	-23	9 @ 833 sf +/-
Science Room	2	1,000	93	2,000	186	2,100	195	100	9	Included in total classroom count
Art Room	1	1,000	93	1,000	93	1,000	93	0	0	Included in total classroom count
Music/Band Room	1	1,300	121	1,300	121	1,300	121	0	0	
Multi-Purpose Room (MPR)	1	1,200	111	1,200	111	572	53	44	4	PSFB sf based on 4 sf/student
Multi-Purpose Room (MPR)						672	62			672 sf of new space in addition
Library/Resource Centre	1	1,500	139	1,500	139	1,560	145	60	6	PSFB sf based on 5 sf/student
Gymnasium	1	6,528	606	6,528	606	6,528	606	0	0	Gymnasium addition
Guidance/Counselling Room	1	250	23	250	23	242	22	-8	-1	Min. 100 sf, max. 500 sf
Grooming Room	1	280	26	280	26	280	26	0	0	
Health Room/Sick Bay	1	100	9	100	9	93	9	-7	-1	
Other	0	0	0	0	0	0	0			
<b>SUBTOTAL INSTRUCTIONAL</b>	<b>19</b>	<b>14,018</b>	<b>1,302</b>	<b>21,898</b>	<b>2,034</b>	<b>21,844</b>	<b>2,029</b>			
ANCILLARY @ 60/40 ratio				14,599	1,356	14,563	1,353			
<b>TOTAL INSTRUCTIONAL AREA</b>				<b>36,497</b>	<b>3,391</b>	<b>36,407</b>	<b>3,382</b>			
Kitchenette				300	28	300	28	0	0	2 pass-thru's c/w OH rolling shutters
<b>SUBTOTAL</b>				<b>36,797</b>	<b>3,418</b>	<b>36,707</b>	<b>3,410</b>			
Mechanical / Electrical (Min 3.8%)				1,395	130	1,346	125	-49	-5	Includes LAN room
<b>TOTAL GROSS AREA</b>				<b>38,192</b>	<b>3,548</b>	<b>38,053</b>	<b>3,535</b>	<b>-139</b>	<b>-13</b>	

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<b>Administration Areas</b>										
General Admin/Reception Area	1	750	70	750	70	323	30	-427	-40	
File Storage, Copy	1	100	9	100	9	80	7	-20	-2	
Principal's Office	1	150	14	150	14	150	14	0	0	
Vice Principal's Office	1	120	11	120	11	129	12	9	1	
Meeting	1	100	9	100	9	108	10	8	1	
Work Room	1	200	19	200	19	185	17	-15	-1	
Staff Room	1	435	40	435	40	440	41	5	0	Based on 15 sf/adult x 29 adults
<b>Program Support</b>										
Student Commons	1	2,100	195	2,100	195	2,650	246	550	51	PSFB sf based on 7 sf/student
Art Storage	1	150	14	150	14	130	12	-20	-2	
Science Prep/Storage	1	300	28	300	28	280	26	-20	-2	
Computer Storage	1	150	14	150	14	150	14	0	0	
Library/Resource Centre Storage	1	200	19	200	19	200	19	0	0	
Multipurpose Room Storage	1	100	9	100	9	100	9	0	0	Reuse existing mechanical room space
Music/Band Room Storage	1	200	19	200	19	215	19	15	0	Reuse existing change room space
Gym Equipment Storage	1	653	61	653	61	592	55	-61	-6	10% net floor area, in gym addition
Gym Change Rooms, shower, WC	4	348	32	1,392	129	1,392	129	0	0	25% net floor area in gym addition
Gym Instructor's Office	2	120	11	240	22	240	22	0	0	Incl. in 25% gym ancillary space
<b>Building Support</b>										
Student Washrooms	1	720	67	720	67	786	73	66	6	
Staff Washrooms	2	32	3	64	6	64	6	0	0	
Custodial/Maintenance	1	381	35	381	35	220	20	-161	-15	PSFB min. 1% of gross building area
<b>SUBTOTAL ANCILLARY SPACE</b>	<b>25</b>			<b>8,504</b>	<b>790</b>	<b>8,434</b>	<b>784</b>	<b>-70</b>	<b>-7</b>	

REMAINDER OF ANCILLARY SPACE AVAILABLE @ 60/40 RATIO	6,094	566	6,129	569
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 Existing Space

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 Existing Space

**Monterey Board Offices  
Feasibility Design Study  
Mechanical and Electrical Systems**

January 7, 2015  
Project Number: 14-387-01

MECHANICAL

Prepared by:

\_\_\_\_\_  
Helmut Waedt, P. Eng.

ELECTRICAL

Prepared by:

\_\_\_\_\_  
Andre Garand

## 1 INTRODUCTION AND SCOPE OF REPORT

### 1.1 INTRODUCTION

- .1 On behalf of the Louis Riel School Division, SMS Engineering Ltd. was commissioned by Number Ten Architectural Group to conduct a mechanical and electrical systems condition survey and report.
- .2 The building was constructed for use as a school, but subsequently converted for office use. The School Division is now considering the building for use as a school once again.
- .3 The building is approximately 45 years old. The building is a single level with an area totaling approximately 25,000 square feet.

### 1.2 SCOPE

The scope of this report was:

- .1 To carry out a visual inspection of the mechanical and electrical systems to determine their apparent physical condition.
- .2 To provide a written report describing the mechanical and electrical systems.
- .3 To report on any major faults or deficiencies in the mechanical and electrical systems.
- .4 To determine compliance with current codes.
- .5 To provide recommendations on upgrades required for the building to function as a school.

### 1.3 EXCLUSIONS

- .1 This report is based on a review of the available construction drawings and a brief visual inspection of the site to determine general type and condition of the systems.
- .2 No functional or operational checks were made on any systems or components.

- .3 The performance levels of the systems were not verified and the references to system capacities are based on information from the original design documents.
- .4 When this building was constructed the use of asbestos in mechanical system pipe insulation was common. The scope of this audit did not include investigation of hazardous materials in mechanical systems. An audit of the building materials should be conducted by a qualified testing agency to identify what, if any, hazardous materials exist.
- .5 When this building was built it was common to use materials that are now considered hazardous. Such material included PCBs in fluorescent light fixtures and a number of asbestos products. It might be assumed that such materials exist in the mechanical and electrical system. We are not aware of any regulatory order to remove hazardous material. We would expect that special precautions will be required when removal of hazardous material takes place during alterations, all in accordance with existing regulations that are practiced by competent contractors.
- .6 The drawings reviewed are not considered as-built and site verification of the as-built condition is not included in this report.

## 2 SUMMARY

### 2.1 MECHANICAL

- .1 Major mechanical system components appear to be original to the building. All have operated beyond their normally expected service life.
- .2 The existing heating boiler is of an inefficient design. The chiller utilizes refrigerant R-22.
- .3 The control system is obsolete.
- .4 All mechanical equipment has operated beyond normal estimated service life. To provide reliability, environmental conditions suitable for a school environment, and operating efficiency, the following systems revisions are recommended.
  - .1 Provide a new hydronic heating plant including high efficiency condensing boilers, variable speed pumping system, and digital controls.
  - .2 Replace existing chiller system with new high efficiency chiller and cooling tower.
  - .3 Remove all fan coils and associated ducting. Provide heating/chilled beams in all classroom areas.
  - .4 Provide a central energy recovery exhaust system to provide air to the heating/chilled beams.
  - .5 Replace the domestic hot water heating system with high efficiency heating storage tanks.
  - .6 Provide a complete system of direct digital controls to provide space climate control, monitor systems, and enable remote systems performance observation.

### 2.2 ELECTRICAL

- .1 Major electrical system components appear to be original to the building. Most have operated beyond their normally expected service life. Other components such as the distribution have problems sourcing new parts.

- 
- .2 The existing fire alarm system though upgraded is a single zone system and will not support the building redevelopment and proposed addition.
  - .3 All electrical equipment has operated beyond normal estimated service life. To meet latest code requirements, provide reliability and operating efficiency for a school environment, the following systems revision are recommended.
    - .1 Provide a new 347/600 Volt 3 Phase 4 Wire service fed from a Manitoba Hydro pad mounted transformer and customer owned CSTE cabinet.
    - .2 Provide a new main distribution, motor control centres, transformers and panelboards.
    - .3 Replace all existing interior and exterior lighting with new energy efficient LED and T5HO fluorescent lighting.
    - .4 Replace all existing voice/data cabling to new Category 6 cabling complete with new LAN room complete equipment racks for cable termination and patching and owner supplied servers, VOIP equipment etc.
    - .5 Provide a new classroom intercom system with classroom call switches, corridor speakers, integral master clock for classroom change tones and exterior horns.
    - .6 Replace the existing fire alarm system with a new addressable multi- loop single stage system complete with pullstations, horn/strobes, heat and smoke detectors and monitoring of the building sprinkler system.
    - .7 Replace the existing security system with a new system.
    - .8 Provide a new closed circuit television system (CCTV).
    - .9 Provide a new gymnasium sound system in the gym.

### 3 MECHANICAL SYSTEMS DESCRIPTION

#### 3.1 PLUMBING

##### .1 Storm Drainage:

- .1 Roof drains are internally piped from the roof down to the crawlspace. The risers are gathered in the crawlspace and a four inch main runs out to connect to a storm sewer on Monterey Road.
- .2 A weeping tile system complete with sump pits and duplex pumps is located in the crawlspace. Pumps are 20-25 years old.

##### .2 Sanitary Drainage:

- .1 Drains from main floor plumbing fixtures are routed throughout the crawlspace. A six inch sanitary sewer main runs out to the sanitary sewer on Monterey Road.
- .2 Internal piping is a combination of cast iron, copper, and galvanized piping.

##### .3 Plumbing Fixtures and Trim:

- .1 Most fixtures appear to be original to the building. Water closets and wall hung sinks are generally in reasonable condition although accessibility does not meet current requirements. As water closets require replacement, low flush fixtures are installed.

##### .4 Domestic Water Systems:

- .1 A two inch domestic water line is connected to the street main on Monterey Road.
- .2 Domestic water piping is copper, mostly original to the building.
- .3 Exposed piping was observed to be insulated with fiberglass insulation. Based on the time of construction, asbestos may be present at fittings, valves, and other devices.

- .4 Domestic hot water is generated with a single natural gas-fired hot water storage tank. The tank appears to be original to the building.

### 3.2 FIRE PROTECTION

- .1 The building is not sprinklered.

### 3.3 HEATING/COOLING

#### .1 Heating/Cooling Plant

- .1 Building hot water heating and ventilation air preheating is provided through a single natural gas-fired cast iron sectional boiler located in the main floor mechanical room. The boiler has an input rating of 2,000 MBH. The boiler has a natural draft combustion system. The boiler appears to be original to the building.
- .2 Combustion air is ducted into the mechanical room.
- .3 Hot water heating recirculation pumps are located in the same mechanical room.
- .4 An air charged expansion tank is located in the mechanical room. It appears to be original to the building.
- .5 A reciprocating chiller and interior fluid cooler provide chilled water for air conditioning. The chiller uses refrigerant R-22, a HCFC refrigerant no longer manufactured, and scheduled for reduced use and full phase-out by 2030. The chilled water system components appear to be original to the building. The fluid cooler draws outdoor air through a dampered low level intake grille and discharges through a dampered roof opening.
- .6 Natural gas is serviced from Monterey Road.

#### .2 General Building Heating/Cooling

- .1 Sixteen fan coils located in the crawlspace are distributed around the perimeter of the building. The fan coils discharge either heated or cooled air through floor grilles into the occupied space.

- .2 The fan coils include a hydronic coil which is supplied with either hot or chilled water, depending on the season and thermostat setting. The return line is a common heating/chilled water line. Control valves in the system operate to direct the return water to either the chiller or the heating boiler.
- .3 The Gym is heated with a dedicated utility fan system that includes a heating/chilled water coil. Supply air is directed through floor grilles.
- .4 Hot water force flow units are located at entrances.
- .5 Heating hot water is distributed to the fan coils and unit heating coils located in the crawlspace with insulated steel piping.

### .3 Heating and Cooling of Ventilation Air

- .1 A central air handling unit located in the crawlspace provides tempered mixed air to the main floor. The unit includes a single hydronic coil used for both heating and cooling. An indoor/outdoor reset schedule is used to control the discharge air temperature based on outdoor temperature.

## 3.4 VENTILATION

- .1 Outdoor air ventilation is supplied via a single air handling unit located in the crawlspace. The system is a mixed air system including outdoor air and return air mixing box.
- .2 This unit provides mixed air to the main floor of the building via supply air ductwork running through the roof structure. Based on drawing information, it is estimated approximately 1,960 liters per sec of outdoor air are required in the existing building. The preliminary estimate for the proposed building is 2,925 liters per second.
- .3 The original building design used the crawlspace as a return air plenum. In 1996 the floor return air grilles were ducted directly to the fan coils. Supply air from the air handling unit was also ducted from the unit directly to each fan coil.
- .4 Washrooms and changerooms are exhausted through roof mounted exhaust fans.

- .5 The crawlspace is ventilated through a dedicated exhaust system.

### 3.5 CONTROLS AND MONITORING SYSTEMS

- .1 Building controls are pneumatic devices with minimal electric sensors.
- .2 A single cylinder control air compressor is located in the mechanical room.
- .3 The control panel includes multiple system performance gauges, but reliability due to age is poor.

## 4 ELECTRICAL SYSTEMS DESCRIPTION

### 4.1 DISTRIBUTION

- .1 The existing building is fed from a 1,200 Ampere 120/208 volt 3 phase 4 wire service fed from Manitoba Hydro via an overhead service drop.
- .2 This service feeds remote 120/208 volt 3 phase 4 wire panelboards and mechanical distributions. All equipment is fed from these distribution points.
- .3 The main distribution is performing adequately but new breakers that fit the CDP section are hard to get and require special custom mounting hardware. Panelboards are full with no spare breaker capacity. Future reliability is poor due to age.

### 4.2 LIGHTING

- .1 The building is illuminated with a combination of original T12 fluorescent fixtures and upgraded T8 fluorescent fixtures.
- .2 There are some incandescent fixtures that have been retrofitted with screw-in mini fluorescent lamps.
- .3 Exterior lighting consists of HID wall mounted fixtures that appear to be original.
- .4 Due to the age of the fixtures and low energy efficiency, we recommend that all lighting be replaced.

#### 4.3 WIRING AND CONDUIT SYSTEMS

- .1 The building appears to be wired mostly in EMT conduit. There is evidence that some newer wiring is done in AC-90 (BX). The condition of the conduit system appears to be acceptable but we have not verified the wiring inside the conduits.
- .2 We recommend that as part of a major redevelopment that all wiring be removed from the conduits and replaced as practicality will dictate that very few conduits could be re-utilized.

#### 4.4 FIRE ALARM SYSTEM

- .1 The main fire alarm system is a single zone hardwired system with pullstations, bells and automatic detectors throughout the building. The main panel was upgraded in the past. The remote devices appear to be original. Audibility was not tested but with the limited number of bells it appears that the system does not meet present day code.
- .2 The entire system will require to be replaced to meet the anticipated building upgrade.

#### 4.5 CLASSROOM INTERCOM SYSTEM

- .1 The original plans included for a classroom intercom system but we did not verify if system is intact on site.
- .2 A new system will be required for a school environment.

#### 4.6 MASTER CLOCK SYSTEM

- .1 There is a master clock system in the general office area but it does not appear to be functional as did not keep proper time.
- .2 A new system will be required but will be incorporated as part of the classroom intercom system.

#### 4.7 VOICE/DATA CABLING SYSTEM

- .1 The existing voice/data cabling system has been continually upgraded to suit the school board requirements. The wiring system supports the division wide VOIP telephone system.
- .2 The main incoming telephone lines are from MTS overhead service cables.

- .3 The system wiring will require reconfiguration to suit the proposed classroom environment.

#### 4.8 SECURITY SYSTEM

- .1 The existing security system was added in the building in the past 10 -15 years. The system consists of the main control panel, remote keypad activation, door contacts and motion detectors.
- .2 The system appears to operate properly but we are unsure of compatibility with new system technologies.
- .3 The system should be replaced with a new system designed specifically for a school environment.

## 5 ROOF

## **MECHANICAL SYSTEMS – UPGRADE RECOMMENDATIONS**

### **5.1 GENERAL**

- .1 It is recommended new mechanical services including heating equipment, cooling equipment, and air handling systems be located in a new mechanical/electrical mezzanine located above the proposed new Gym change room area.

### **5.2 PLUMBING**

- .1 Storm drainage piping is original to the building. Due to age, it is likely the incidence of pipe leaks will increase. To improve long term system reliability it is recommended the storm drainage system be replaced. Horizontal rainwater leaders to be insulated.
- .2 The sanitary sewer system piping is mostly original to the building. It is likely the incidence of pipe leaks will increase. To improve system reliability it is recommended the sanitary sewer drainage system be replaced.
- .3 To improve reliability of the domestic water system, it is recommended the domestic hot water heating system, and all piping be replaced.
- .4 To minimize water consumption, new low flow plumbing fixtures should be provided, including automatic faucets in all public washrooms.
- .5 All domestic water piping is to be insulated in accordance with the Manitoba Energy Code.

### **5.3 FIRE PROTECTION**

- .1 Installation of a sprinkler system is required. A new six inch fire service line, sprinkler control system, and fire department connection is required.

### **5.4 HEATING**

- .1 The heating boiler should be replaced with two 1,000 MBH input natural gas-fired condensing boilers.
- .2 New variable speed pumps and distribution piping should be provided.

## 5.5 VENTILATION AND SPACE HEATING AND COOLING

- .1 The existing air handling systems are inappropriate for the intended use of the building. The following system is recommended.
  - .1 Provide ceiling mounted heating/chilled beams in all classroom areas, staff areas, and administration areas.
  - .2 Provide a four pipe hot water and chilled water distribution system connected to heating/chilled beams.
  - .3 All heating and chilled water piping to be insulated in accordance with the Manitoba Energy Code.
  - .4 Provide a central supply/exhaust air heat recovery system providing sensible and latent energy recovery (Temp-Eff or equal). The unit would supply approximately 2,925 liters per second of primary air to the ceiling mounted heating/chilled beams.
  - .5 Provide a dedicated mixed air handling system for the new Gymnasium. Air handling unit to be complete with heating and cooling coil, filter bank, internal isolation, and insulation. The minimum outdoor air quantity would be controlled with an indoor air quality sensor.
  - .6 Provide hot water force flow heaters at all entrance vestibules.

## 5.6 HUMIDIFICATION

- .1 It is recommended natural gas-fired humidification be provided for the ventilation system serving the main school areas. The Gym would likely not require humidification.

## 5.7 CONTROLS

- .1 The control system is obsolete and ineffective. It is recommended all HVAC controls be upgraded with a DDC system.
- .2 Each room would include individual temperature control.
- .3 System would include ability for central monitoring of space conditions, equipment alarms, operating schedules, etc.

## 6 ELECTRICAL SYSTEMS – UPGRADE RECOMMENDATIONS

### 6.1 DESIGN SUMMARY

- .1 Provide a new 600 Ampere 347/600 volt, 3 phase, 4 wire, underground service fed from a new 800 Ampere 347/600 volt, 3 phase, 4 wire weatherproof CSTE cabinet located adjacent to the utility transformer.
- .2 New telephone conduit will be installed from the property line to the main floor telephone backboard. This will establish the demarcation line.
- .3 A new Fibre Optic cable entrance conduit will be provided.
- .4 New Cable Television underground service conduit will be extended from the property line to the main electrical room.
- .5 Interior lighting design will be in collaboration with the architectural and interior design team. Energy efficient lighting that combines practicality, lamp efficacy, low energy use and long lamp life, all combined in decorative and pleasing enclosures will be utilized.
- .6 Receptacles and power connections will be located in all rooms as required to suit the room's intended purpose.
- .7 Mechanical equipment connections will be provided as required including grouped motor starter assemblies, starters, remote thermostats, interlocks etc.
- .8 Voice and Data Cabling Systems, Fire Alarm System, Card Access System, Classroom Intercom System, Security System and Closed Circuit Television System will be provided for the building.

### 6.2 SITE SERVICES

- .1 Manitoba Hydro will provide a pad mounted transformer c/w fiberglass pad on the property. The transformer will feed a new 800 Ampere 347/600 volt, 3 Phase, 4 Wire weatherproof CSTE cabinet located adjacent to the utility transformer. New 600 Ampere 347/600 Volt 3 Phase 4 Wire service feeders will be extended to the new main distribution located in the main floor electrical room.

- .2 Provide new LED site lighting light fixtures mounted on poles for general parking lot lighting and wall mounted LED building perimeter light fixtures will be provided. Due to the school location in a residential neighborhood, the fixtures will be selected with sharp cut-off with no light spill past the property line.. Lighting will be powered at 120 Volts and controlled via a low voltage relay panel.
- .3 Parking receptacles J. R. Stephenson Ltd. Model No. P202-2201 parking pedestals on 18"Ø concrete bases. Parking receptacles to be IPLC controlled.
- .4 Provide receptacles for 25 car stalls.

### 6.3 MAIN DISTRIBUTION

- .1 A new 347/600 volt, 3 phase, 4 wire, 600 Ampere 347/600 volt, 3 phase, 4 wire, 100% rated main distribution and utility metering will be installed in the building main electrical room. New underground feeders from the CSTE cabinet will be extended to the new main distribution. All new loads will be connected to this distribution.
- .2 Transient Voltage Surge Suppression will be installed on the main distribution and sub-distributions.
- .3 The large mechanical loads will be connected at 600 volt, 3 Phase.
- .4 Two (2) 112.5 kVA dry-type transformers will be installed to feed the lighting and receptacles loads. The second transformer will feed the building commercial kitchen loads, small motor loads and other 120/208 volt loads. Two 600 amp 120/208 volt CDP's will be installed on the secondary side of the transformers to feed 120/208 volt panels.
- .5 Panelboards will be located throughout the building and close to the loads as required. This will reduce voltage drop to acceptable levels and maintain the branch circuit wiring to # 12 AWG. Panelboards will be provided with lockable doors, 10% spare breakers and 15% space for future breakers.
- .6 There are no requirements for emergency power generator or UPS systems.

## 6.4 INTERIOR LIGHTING

- .1 Energy efficient T5HO fluorescent lighting with electronic ballasts in combination with LED light fixtures will be utilized in office areas, classrooms, corridors, multi-purpose rooms, meeting rooms, storage rooms and service rooms. Lamp color will be 3500 deg. K. All lighting will be powered at 120 Volts.
- .2 Individual rooms will have local switching via toggle switches or occupancy sensors dependent on use and occupancy.
- .3 Approximately 20% of lighting fixtures in corridors will be wired as unswitched "night lights".
- .4 All rooms with windows such as the Lobbies, open office areas, meeting rooms etc. will include daylight harvesting sensors and dim the fixtures off during daylight hours.
- .5 A low voltage relay / photocell system will be utilized to control all exterior lights.
- .6 Accent and display lighting will be utilized to emphasize special architectural features. We propose to illuminate these with surface or recessed energy efficient Light Emitting Diode (LED) sources which have a rated lamp life of 50,000 hours.
- .7 Lighting levels will be designed to the midrange of the Illumination Engineering Society (IES) recommended levels.
- .8 Light fixtures will be selected to ensure they are applicable for Manitoba Hydro "Power Smart Rebate" program.

## 6.5 EXIT AND EMERGENCY LIGHTING

- .1 LED type exit lighting along all exit corridors and at all exit doors; exit lights to be connected to DC battery emergency lighting system.
- .2 DC emergency lighting battery banks with minimum 30 minute capacity and remote DC double lamp emergency lights in all corridors, egress routes and stairs.

## 6.6 RECEPTACLES AND POWER OUTLETS

- .1 Provide a regular fourplex (2 duplexes) receptacle at each work station or office desk. Connect up to six regular receptacles to a regular circuit.
- .2 Provide one fourplex and one duplex receptacles in each private office. Connect up to six regular receptacles to a regular circuit.
- .3 Provide four regular duplex receptacles in each meeting room. Connect up to six regular receptacles to a regular circuit.
- .4 Each classroom will be provided with 5 regular duplex receptacles connected to one common circuit. In addition provide a ceiling mounted receptacle for future projector connected to a separate circuit.
- .5 Provide duplex receptacles on dedicated circuits for vending machines, fridges, dishwashers, coffee makers, microwaves, photocopiers, etc.
- .6 Provide duplex receptacles on dedicated circuits at 36" intervals along work counters, boardroom counters, coffee stations, etc.
- .7 Provide convenience receptacles in all other rooms, corridors and stairs in the building.
- .8 Provide GFI receptacles at all washroom vanity sinks.
- .9 Provide power and control wiring for handicap door operators.
- .10 Provide duplex receptacles on dedicated circuits for each LAN rack.
- .11 Wiring shall be copper type RW90, installed in EMT conduit inside building and rigid PVC conduit where underground.
- .12 Type "BX" cable may be used for drops from outlet boxes to individual lighting fixtures and for branch circuit wiring in steel stud partitions; all home runs to panels shall be in conduit.

## 6.7 MECHANICAL EQUIPMENT

- .1 All mechanical equipment shall be wired and connected.

- .2 Motor connections shall include manual starters or magnetic starters installed in MCC, interlock wiring and disconnect switches as required.
- .3 Wire and connect float switches, pressure switches, alternators, alarms, etc. for sump pumps, and circulation pumps.
- .4 Provide 120V power supply for all DDC control panels.
- .5 All equipment mounted on the exterior of the building shall be weatherproof.

#### 6.8 VOICE AND DATA CABLING SYSTEM

- .1 New Telephone and Data copper and fibre optic cables will be extended to the building main LAN room.
- .2 New LAN racks c/w patch panels will be provided.
- .3 Each work station, office, meeting room and boardroom will have two (2) Category 6 cable drops; one for telephone and the other for data. All will terminate into the new LAN room.
- .4 Each classroom will have 2 outlets each with 2 Cat 6 cable drops.
- .5 Cat 6 cable drops will supplied for network printers, photocopiers, and fax machines.
- .6 Cable shall be provided to the reception desk for the telephone switchboard.
- .7 Provide additional voice outlets staff room, etc.
- .8 Allow for wire basket tray installed in the main corridor and a network of 50 mm "J" hooks, routed to the outlets. Quantity of J-hooks shall be as required plus 15% spare capacity.
- .9 The entire cabling system shall be tested and test results submitted with the Operating Manuals.

#### 6.9 FIRE ALARM SYSTEM

- .1 A new stand-alone single stage addressable fire alarm system shall be provided and all devices connected as required.

- .2 During an alarm the LED correlated with the zone (building area) in which the alarm occurred shall illuminate. The alarm LED shall not go out until manual station or device that activated the alarm is reset.
- .3 The new main fire alarm control panel will be located adjacent to the building front entrance lobby.
- .4 Pullstations shall be located at every "means of egress" door leading to the building exterior.
- .5 Automatic heat detectors either fixed temperature or rate of rise units shall be installed in service rooms and mechanical rooms.
- .6 Automatic smoke detectors will be installed in all corridors, storage rooms and electrical rooms.
- .7 Magnetic door hold open devices will be connected to the fire alarm system to ensure that doors release and close upon fire alarm system activation.
- .8 Alarm signal devices shall be horn/strobes, recessed or surface mounted depending on the area.
- .9 Install all wiring in EMT conduit system.

#### 6.10 CARD ACCESS SYSTEM

- .1 A Card Access System will be provided in the facility. The system will consist of centrally located, multi-door controller panels, operating and reporting software, proximity card readers, door position switches, magnetic lock or electric latch operation on related doors and alarm functions.
- .2 Allow for a total of 10 card access doors in the system.
- .3 Install all wiring in EMT conduit system.

#### 6.11 CLASSROOM INTERCOM SYSTEM

- .1 A Classroom Intercom System will be provided in the facility. The system will consist of a centrally located control panel, operating software, paging microphone, interconnected to the VOIP telephone system for calls from any phone location, classroom call and speaker stations and corridor ceiling speakers.

- .2 Install all wiring in EMT conduit system.

#### 6.12 SECURITY SYSTEM

- .1 A Security System will be provided in the facility. The system consists of a main control panel, keypad controller located at the main entrance, operating and reporting software, door monitor switches located at all exterior doors.
- .2 Motion sensors located in all major corridors and gymnasium areas.
- .3 Allow for the connection of 12 doors and 12 motion sensor alarm points onto the system.
- .4 Install all wiring in EMT conduit system.

#### 6.13 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM

- .1 A Closed Circuit Television (CCTV) System will be provided in the facility. The system will consist of interior and exterior digital color IP based dome cameras, controller panels, internet based operating and reporting software.
- .2 Allow for a total of 6 exterior fixed zone cameras and 6 interior fixed lens dome cameras.
- .3 Install all wiring in EMT conduit system.

#### 6.14 DOOR BUZZER SYSTEM

- .1 Provide a door buzzer system at the shipping/receiving entrance and the kitchen area.

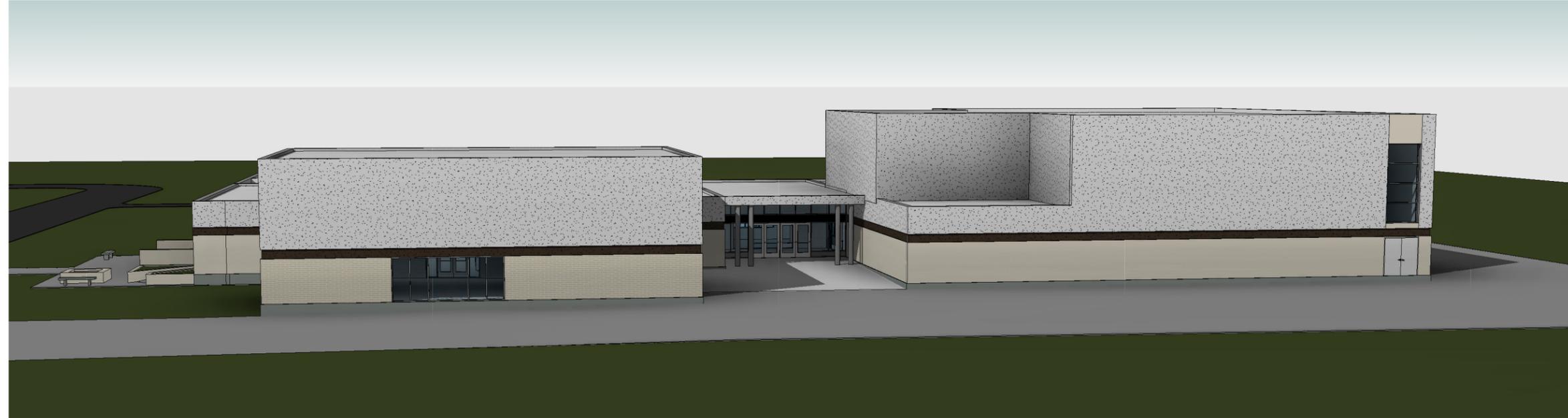
#### 6.15 CABLE TELEVISION SYSTEM

- .1 Provide cable television outlets c/w co-axial cables back to the LAN room.
- .2 Additional outlets will be provided in the public areas as required.

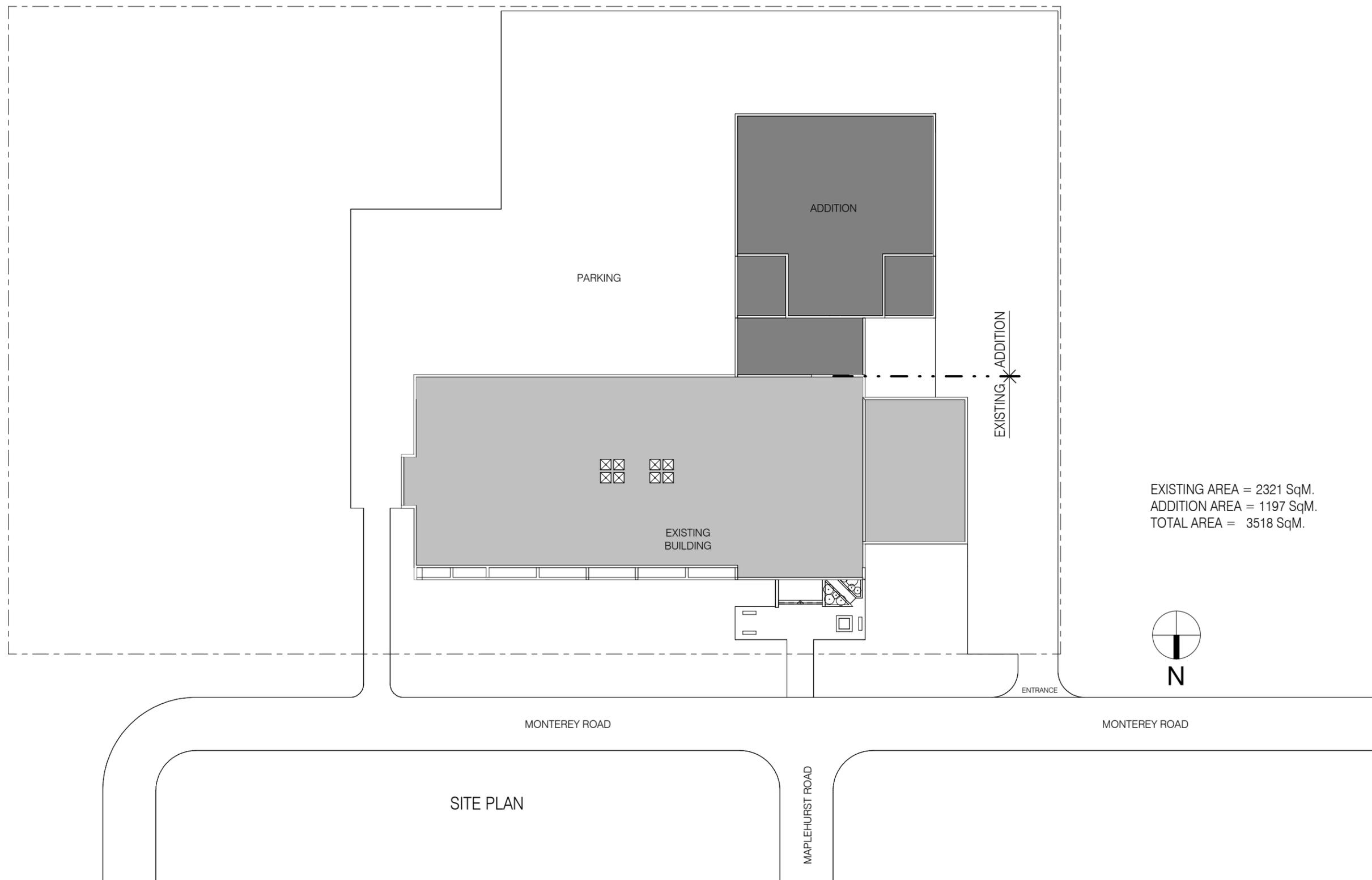
# Appendix A - Drawings

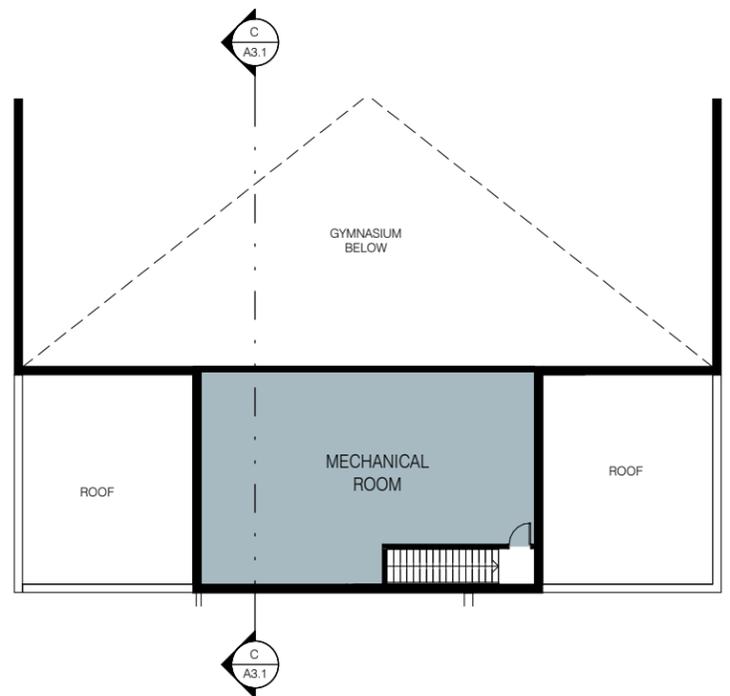


VIEW TO THE NORTHWEST CORNER



VIEW TO THE NEW ENTRY





MECHANICAL MEZZANINE PLAN



EXTENT OF ADDITION

LEGEND

- NEW WALL
- EXISTING WALL

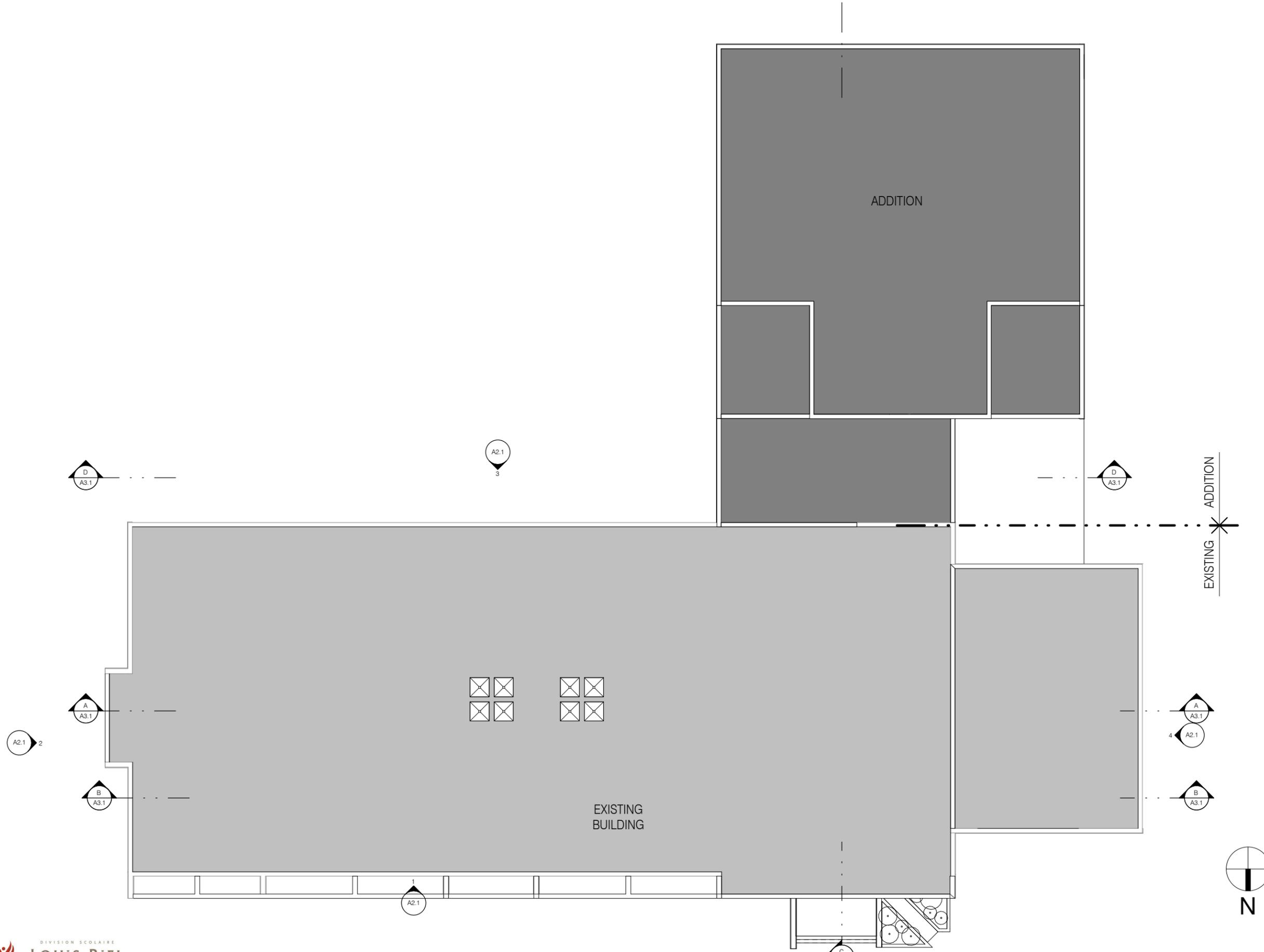
- ANCILLARY SPACE
- CIRCULATION
- INSTRUCTIONAL SPACE



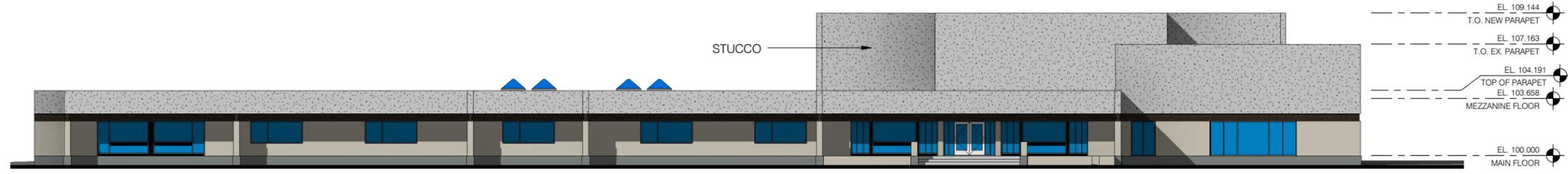
MAIN FLOOR PLAN

ADDITION  
EXISTING

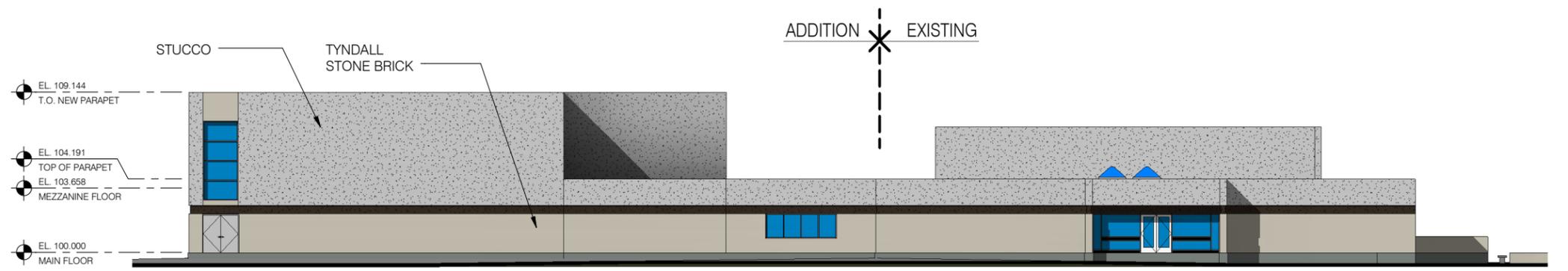




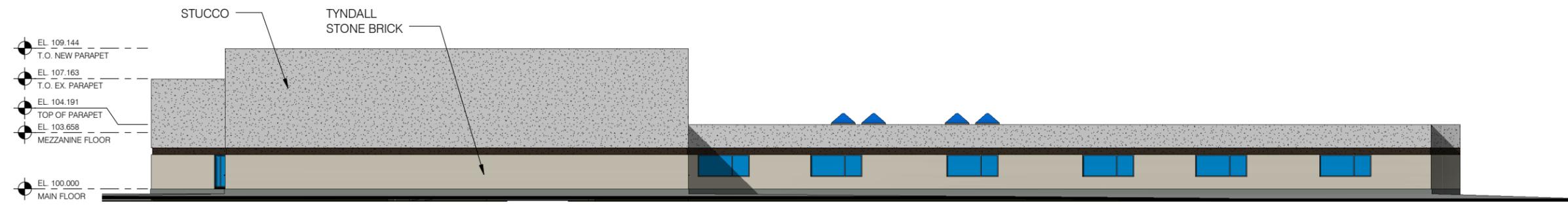
ROOF PLAN



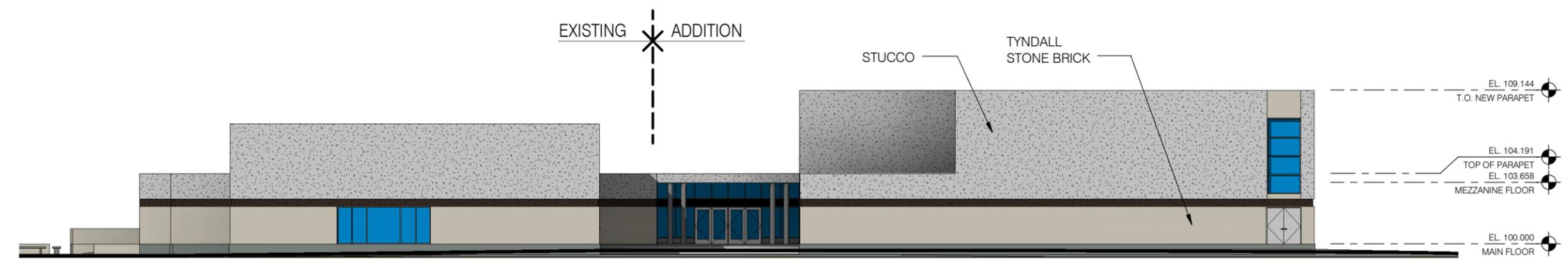
NORTH ELEVATION



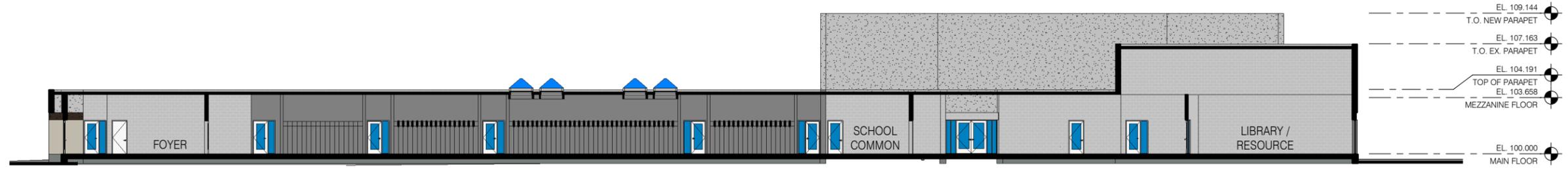
EAST ELEVATION



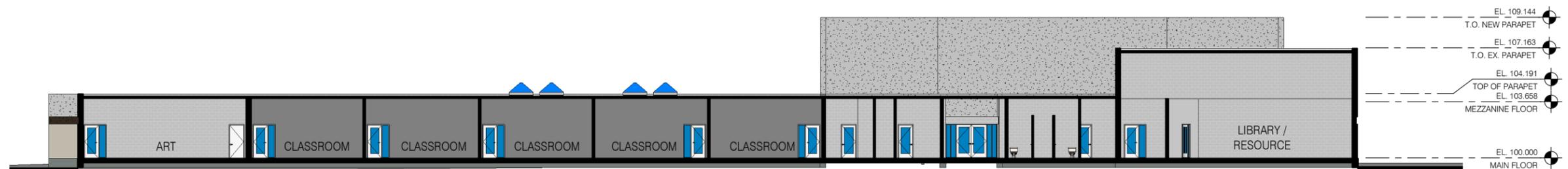
SOUTH ELEVATION



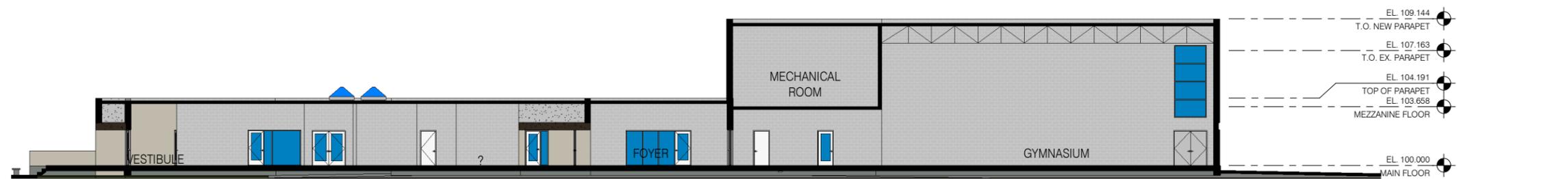
WEST ELEVATION



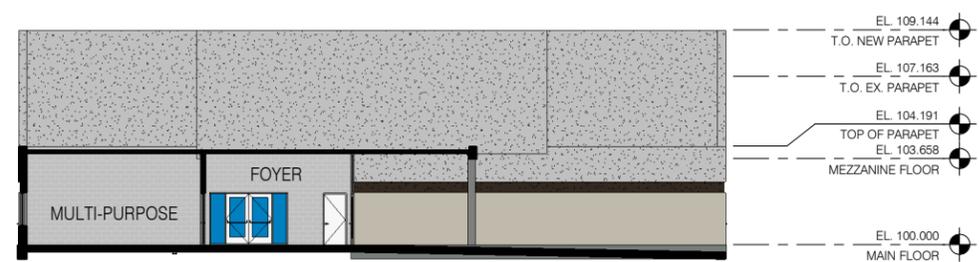
SECTION A-A



SECTION B-B

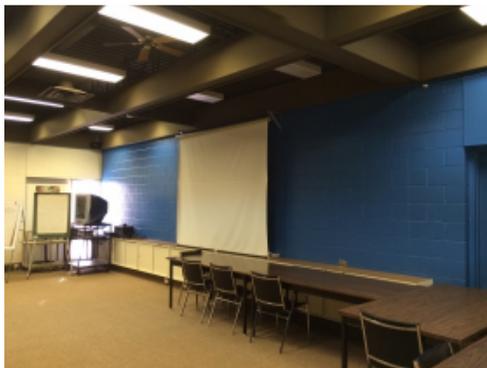
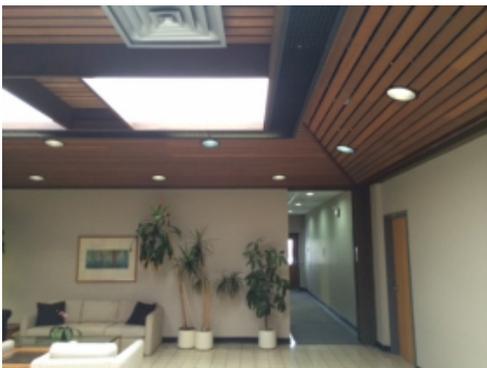
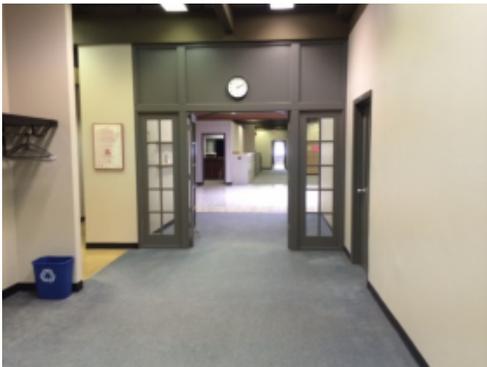
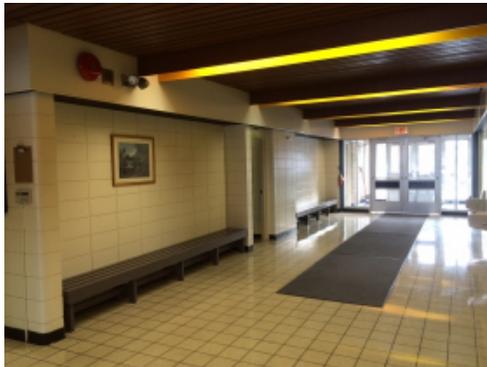


SECTION C-C



SECTION D-D

## Appendix B – Photographs



# Appendix C – Code Review

## BUILDING CODE SUMMARY

Item + Description	MBC Reference
<b>1.0 Building Classification</b>	
.1 Group A, Division 2 (School)	3.1.2.1.(1), Table 3.1.2.1.
.2 1 Storey, sprinklered	3.2.2.26.
.3 Facing one street	
.4 Building Area:	
.1 Existing	2,321 m2 (24,983 sf)
.2 <u>Proposed Addition</u>	<u>1,053 m2 (11,334 sf)</u>
.3 Total Building Area	3,374 m2 (36,317 sf)
<b>2.0 Occupant Load</b>	
.1 Daytime:	
.1 Students	300 persons
.2 <u>Staff</u>	<u>29 persons</u>
.3 Total Occupant Load	329 persons
.2 Evening (Gym end of school):	
.1 Washroom fixture count	9 female / 6 male fixtures
.2 Total Occupant Load	500 persons
	3.7.2.2.(1) 3.7.2.2.(6), Table 3.7.2.2.A
<b>3.0 Construction:</b>	
.1 Combustible and Non-combustible construction	3.2.2.26.
<b>4.0 Fire Separations:</b>	
.1 Floor Assemblies:	
.1 Fire separations and, if of combustible construction, shall have a fire resistance rating not less than 45 min.	3.2.2.26.(2)(a)
.2 Mezzanines:	
.1 Fire separations and, if of combustible construction, shall have a with fire resistance rating not less than 45 min.	3.2.2.26.(2)(b)
.3 Load-bearing walls, columns, arches:	
.1 Fire resistance rating not less than 45 min. or be of non-combustible construction	3.2.2.26.(2)(c)
.4 Exits:	
.1 Fire separations with fire resistance rating not less 45 min.	3.4.4.1.(1)
.2 45 min. rated door with closer required	3.1.8.4.(2), Table 3.1.8.4., 3.1.8.11.(1)
.3 Wired glass in door between exit/adj. floor $\leq 0.0645$ m2	3.1.8.14, Table 3.1.8.15, 3.1.8.16
.5 Service Room:	
.1 Fire separations with fire resistance rating not less than 1 hr	3.6.2.1.(1)
.2 45 min. rated door with closer required	3.1.8.4.(2), Table 3.1.8.4., 3.1.8.11.(1)
.6 Janitor Room:	
.1 Unrated fire separations required	3.3.1.21(3)
.2 45 min. rated door with closer required	3.1.8.4.(2), Table 3.1.8.4., 3.1.8.11.(1)

Item + Description	MBC Reference
.7 Crawl Space No fire separations or compartmentalization required	3.2.2.9., 3.1.11.6
.8 Corridors No fire separations required	3.3.2.6.(4)
<b>5.0 Exits:</b>	
.1 A minimum of two (2) exits are required on each floor	3.4.2.1.(1)
.2 One exit is allowable from mechanical mezzanine	3.4.2.1.(2), Table 3.4.2.1.B
<b>6.0 Travel Distance:</b>	
.1 Exits shall be located so travel distance to one exit is $\leq 45$ m	3.4.2.5.(1)(c)
<b>7.0 Egress / Exit Widths:</b>	
.1 Min. agg. width/exit door = 500 person x 6.1mm/person = 3,050 mm 3,050 mm $\div$ 3 exits = 1,017 mm/exit	3.4.3.2.(1)(a)
.2 Min. width of exit corridors and ramps shall be $\geq 1100$ mm	3.4.3.2.(8), Table 3.4.3.2.A.
.3 Min. width of exit stairs shall be $\geq 900$ mm	Table 3.4.3.2.A.
<b>8.0 Handrails:</b>	
.1 Handrails top and bottom of stairs to extend parallel to the floor	3.4.6.5.(10)
<b>9.0 Guards:</b>	
.1 No openings shall permit passage of sphere $\geq 100$ mm diameter	3.4.6.6.(5)
<b>10.0 Washroom Fixtures</b>	
.1 Daytime:	
.1 300 students $\div$ 2 = 150 males + 150 females - 150 males require 3 water closets min. - 150 females require 6 water closets min.	3.7.2.2.(6), Table 3.7.2.2.A.
.2 29 staff $\div$ 2 = 15 males + 15 females - 15 males require 1 water closet min. - 15 females require 1 water closet min.	3.7.2.2.(6), Table 3.7.2.2.A.
.2 Evening:	
.1 500 persons $\div$ 2 = 250 males + 250 females - 250 males require 5 water closets min. - 250 females require 9 water closets min.	3.7.2.2.(6), Table 3.7.2.2.A.
<b>11.0 Barrier-Free Design:</b>	
.1 Barrier-free design requirements apply to this building	3.8.1.1.
.2 At least 50% of pedestrian entrance shall be barrier-free	3.8.1.2.
.3 Barrier-free path of travel $\geq 1100$ mm unobstructed width	3.8.1.3.(1), 3.8.2.1.(1)
.4 A barrier-free washroom is required on each floor level	3.8.2.3.(1)
.5 Barrier-free pedestrian entrances shall have power door operator	3.8.3.3.(5)
.6 Min. clearances required for doors in barrier-free path of travel	3.8.3.3.(10)

# Appendix D – Architectural Outline Specification

### 3.0 ARCHITECTURAL OUTLINE SPECIFICATION

#### 3.1 Foundations

- .1 Piles
- .2 Grade Beams
- .3 Weeping tile
  - Weeping tile system connected to sump pits in the crawl space.

#### 3.2 Floor Construction

- .1 Main Floor Construction (Change Rooms, Multi-Purpose Room, Foyer)
  - 63.5 mm concrete topping;
  - 38 mm steel deck;
  - Steel joists spaced at 1200 o.c. supported on steel beams;
  - 1200 mm clear crawlspace c/w 50mm sand on heavy duty poly.
- .2 Main Floor Construction (Gym)
  - Reinforced structural concrete slab, 150 mm thick;
  - Rigid Insulation to R10;
  - 150 mm shearmat;
  - No crawlspace.
- .3 Mechanical Mezzanine Floor Construction (1 hour rated assembly)
  - 63.5 mm concrete topping;
  - 38 mm steel deck;
  - Steel joists spaced at 1200 o.c. supported on steel beams;
  - Spray fireproofing on deck, joists and beams for 1 hr. rated assembly;
  - Acoustic ceiling tile.

#### 3.3 Exterior Walls

- .1 EW-1: Masonry on Concrete Block – Bottom of Exterior Walls
  - Tyndall Stone Brick Veneer c/w with anti-graffiti coating;
  - Stainless Steel Brick ties;
  - 38mm air space;
  - Foil faced Polyiso Rigid Insulation (R28);
  - Elastometric Air/Vapour Barrier;
  - 190 Concrete Block; Painted Finish.
- .2 EW-2: Stucco on Concrete Block – Top of Exterior Walls
  - Cement Stucco;
  - Expanded Metal Lath;
  - Horizontal Girts @ 600 o.c.;
  - Foil faced Polyiso Rigid Insulation (R28);

- Elastomeric Air/Vapour Barrier;
- 190 Concrete Block; Painted Finish.

### 3.4 Roof Construction

- .1 R-1: New Addition
  - SBS roofing membrane system;
  - Torchable protection board;
  - RSI 5.3 (R35) Type II extruded insulation;
  - Elastomeric vapour barrier;
  - 13 mm exterior drywall;
  - 38 mm steel deck (Acoustic steel deck in Gymnasium);
  - Steel joists spaced at maximum 1800mm o.c. sloped for drainage supported on steel beams;
  - Backslopes to be Type II expanded polystyrene tapered insulation;
- .2 R-2: Upgrade Existing Roof
  - SBS roofing membrane system;
  - Torchable protection board;
  - RSI 5.3 (R35) Type II extruded insulation;
  - Elastomeric vapour barrier;
  - 13 mm exterior drywall;
  - Existing roof deck and framing.

### 3.5 Doors and Windows

- .1 Exterior Entrance Doors
  - Kawneer 350 Tuffline (or equal) doors with continuous hinges;
  - Double glazed lites;
  - Automatic door operators at North (existing) and West (addition) main building entrances at inside and outside vestibule doors;
  - CCTV security.
- .2 Interior Wood Doors
  - Solid core wood doors c/w select white birch face; clear stain finish;
  - Glass vision panels in all classroom doors;
  - 16 ga pressed steel welded frames;
  - Automatic door operator at Grooming Room.
- .3 Rated Metal Interior Door (1.0 Hour)
  - 18 ga hollow metal doors with vision panel and 16 ga pressed steel welded frames; painted finish;
  - Constructed to ULC requirements;
  - Hardware to meet all applicable code requirements.
- .4 Windows
  - Double glazed aluminum windows c/w clear anodized finish;
  - Operating windows to be awning openers;

- Acceptable manufacturers: Kawneer, Alumicor.
- .5 Interior Windows
  - 16 ga pressed steel welded frames with fixed single glazing.
- .6 Pyramid Skylights (School Commons - allow for 4 units to replace existing skylights and 4 units in new roof openings; approx. 1335 mm x 1335mm)
  - Double glazed sealed units in extruded aluminum frames.
  - Acceptable manufacturer: Wasco Products Inc.
- .8 Glass
  - .1 Typical Exterior Glazing (Double-pane)
    - Clear Glass: Double-pane with outer pane of glass, 6 mm AFG clear float, inner pane of 6 mm AFG Comfort-Ti-R with low 'e', argon filled cavity with warm edge spacer (Edge Tech Super Spacer).
    - Clear Tempered Glass (To be used in all exit doors and sidelights adjacent to exit doors): Double-pane with outer pane of 6 mm AFG clear tempered glass, inner pane of 6 mm tempered glass; AFG Comfort E2 with low 'e', argon filled cavity with warm edge spacer (Edge Tech Super Spacer).
  - .2 Interior Glazing:
    - 6 mm laminated glass in doors & sidelights;
    - 6 mm clear tempered glass in all other locations.

### 3.6 Interior Moveable Partitions

- .1 Operable Wall Partition (Gymnasium, Multi-Purpose Room):
  - Acceptable product: Acousti-Seal model 933E by Modernfold; continuously hinged electric, steel face, heavy-duty vinyl finish.

### 3.7 Interior Partitions

- .1 W-1: Typical Interior CMU Wall at new addition
  - 190 mm concrete block to underside of structure.
- .2 W-2: Typical Wall at existing building
  - 92mm steel studs @ 400 o.c. to 150mm above ceiling;
  - 15.9 mm gypsum drywall both sides.
- .3 W-3: Typical Acoustic wall at existing building (instructional spaces)
  - 92 mm steel stud @ 400 o.c. to u/s structure;
  - 15.9 mm gypsum drywall both sides of steel studs;
  - 12.5 mm resilient metal channels;
  - 50 mm mineral wool sound batt insulation within stud cavity;
  - Provide backer rod and caulking at top and bottom of drywall.

### 3.8 Finishes

#### .1 Flooring

- .1 Resilient Sheet Flooring (Classrooms, Band, Multi-Purpose Room, Student Commons, Addition Foyer and change rooms)
  - Sheet vinyl: 2mm thick homogeneous vinyl with colour and pattern through total thickness. Tarkett Optima or approved equal. 5 colours.
  - Safety Floor: Altro Walkway 20 or approved equal (Kitchen, Change Rooms).
- .2 Carpet Tile (Library Resource Centre, administrative areas)
  - 28 oz dense tufted textured loop, anti-bacterial treatment, low VOC adhesive.
- .3 Cushioned sports flooring (Gymnasium)
  - Acceptable product – Pulastic by Centaur Flooring or approved equal.
- .4 Stair Treads
  - Rubber one piece treads and anti-slip nosings.
- .5 Base
  - 100mm rubber base typical.

#### .2 Interior Wall finishes

- .1 Paint
  - Flat
    - 1 coat primer sealer;
    - 2 coats latex flat finish.
  - Semi-gloss
    - 1 coat primer sealer;
    - 2 coats latex semi-gloss.
  - Epoxy
    - 1 coat epoxy primer;
    - 2 coats of 2 component epoxy semi-gloss paint.

Acceptable Manufacturers: Glidden Paint, Benjamin Moore, Para Paints, Pratt and Lambert. All paints to be low VOC.
- .2 Wall Tile – (At Washrooms, Grooming Room and Change Rooms)
  - Ceramic Tile 1
    - 4" x 16" glazed wall tile; gloss finish (4 colors).
  - Ceramic Tile 2

- 4" x 4" glazed dot mounted mosaic wall tile; gloss finish (2 colors).
- Glass Tile 1 – Accent Tile
  - 1" x 1" glass wall tile; (2 colors).

### .3 Ceilings

#### .1 Acoustical Ceilings

- ACT-1 (Instructional): 610 x 1200 x 16mm non-directional fissured c/w 25mm wide exposed "T" suspension system – white.
- ACT-2 (Student Commons): 610 x 610 x 16mm non-directional fissured, Tegular Edge c/w 25mm wide exposed "T" suspension system – white.
- ACT-3 (Library Resource Centre): Acoustic Cloud Feature Ceiling, Armstrong Axiom Classic or equivalent – white.

#### .2 Drywall Ceilings

- 16 mm gypsum drywall on metal channel suspension system.

### .4 Sound Panels

#### .1 Gymnasium and Commons Acoustic Panels

- Top 3000mm of perimeter walls around Gymnasium and Commons to be Tectum Finale System c/w 25mm beveled Tectum panels and sound insulation.

#### .2 Band and Music Room

- Acoustic Diffuser and Absorber panels to be used on approximately 25% of perimeter walls and ceiling in Band Room.

# Appendix E – Cost Estimate

**MONTEREY SCHOOL  
ADDITION AND RENOVATION  
WINNIPEG, MANITOBA**

**CLASS 'D' ESTIMATE**

**December 22, 2014**

**Hanscomb**

**MONTEREY SCHOOL  
ADDITION AND RENOVATION  
WINNIPEG, MANITOBA**

**CLASS 'D' ESTIMATE**

**Prepared For:**

**NUMBER TEN ARCHITECTURAL GROUP  
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**December 22, 2014**

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4.	Gross Floor and Site Developed Areas	7
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**Appendices**

- A - DETAILED ELEMENTAL COST ESTIMATE
- B - DOCUMENTS & DRAWINGS LISTS
- C - REPRESENTATIVE DRAWINGS

## **1. INTRODUCTION**

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- 1.1 Purpose: This **Class 'D' Estimate** is intended to provide a realistic allocation of direct and indirect construction costs for the **Monterey School, Addition and Renovation**, located in **Winnipeg, Manitoba**, with exceptions of items listed in 1.5 section.
- 1.2 Methodology: From the documentation and information provided, quantities of all major elements were assessed or measured where possible and priced at rates considered competitive for a project of this type under a **stipulated sum** form of contract in **Winnipeg, Manitoba**.
- Pricing shown reflects probable construction costs obtainable in the **Winnipeg, Manitoba** area on the effective date of this report. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the work.
- 1.3 Description: The **Monterey School, Addition and Renovation** project includes transforming the 2,321m<sup>2</sup> existing building back into a school suitable for up to 300 students and addition of new 1,197m<sup>2</sup> gymnasium c/w showers and wash rooms. It consists of concrete/structural steel framed structure on piles foundations. Exterior cladding consists of masonry & stucco on concrete block and double glazed aluminum windows. The roofing system is SBS roofing membrane system. Interior finishes are typical of a school with standard mechanical and electrical services.
- 1.4 Specifications: For building components and systems where specifications and design details are not available, quality standards have been established based on discussions with the design team.

## **1. INTRODUCTION**

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1.5 Exclusions: This **Class 'D' Estimate** does not provide for the following, if required:

- Land acquisition costs and impost charges
- Development charges
- Legal fees and expenses
- Right of way charges
- Easement costs
- Financing costs
- Fund raising costs
- Owner's staff and associated management
- Relocation of existing facilities, including furniture and equipment
- Professional fees and expenses
- Cost of contaminated soil removal, if required
- Costs of asbestos removal, if required
- Costs of PCB contaminated electrical equipment removal
- Window washing equipment
- Kitchen equipment
- Window treatments
- Maintenance equipment
- Special audio, visual, security equipment or installation other than provision of empty conduit systems carried in electrical division
- Loose furniture, furnishings and equipment
- Phased construction premiums
- Winter construction (foundation concrete heating & hoarding)
- Overtime allowance
- Cash allowance
- Construction contingency
- Third Party Commissioning costs
- Preventative maintenance contracts
- Building permit
- Value added tax (e.g. Harmonized Sales Tax, Goods and Services Tax)

## **2. DOCUMENTATION**

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- This [Class 'D' Estimate](#) has been prepared from the documentation included in Appendix B of this report.

All of the above documentation was received from [Number Ten Architectural Group](#) and was supplemented with information gathered in meeting(s) and telephone conversations with the design team, as applicable.

Design changes and/or additions made subsequent to this issuance of the documentation noted above have not been incorporated in this report.

### **3. COST CONSIDERATIONS**

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- 3.1 Cost Base: All costs are estimated on the basis of competitive bids (a minimum of 4 general contractor bids and at least 3 subcontractor bids for each trade) being received in **December 2014** from general contractors and all major subcontractors and suppliers based on a **stipulated sum** form of contract.
- Should the above minimum bidding conditions not occur, we can expect to see an increase in the construction cost estimate.
- 3.2 Escalation: An allowance **1.5%** of has been made for construction cost escalation that may occur between **December 2014** and the anticipated bid date of June 2015.
- 3.3 Contingencies: An allowance of **15%** has been included to cover design and pricing unknowns. This allowance is not intended to cover any program space modifications but rather to provide some flexibility for the designers and cost planners during the remaining contract document stages.
- No allowance has been made to cover construction (post contract) unknowns. It is recommended that a provision for this item be included in the overall program budget.
- 3.4 Unit Rates: The unit rates in the preparation of this **Class 'D' Estimate** include labour and material, equipment, subcontractor's overheads and profits.
- 3.5 Taxes: Provincial Sales Tax is included where applicable. No provision has been made for the values added tax (e.g. Harmonized Sales Tax, Goods and Services Tax). It is recommended that the owner make separate provision for HST/GST in the project budget as applicable.
- 3.6 Statement of Probable Costs: Hanscomb has no control over the cost of labour and materials, the contractor's method of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of experience, qualifications and best judgment of the professional consultant familiar with the construction industry.

**3. COST CONSIDERATIONS (cont'd)**

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3.6 Statement of  
Probable Costs:  
(continued)

Hanscomb cannot and does not guarantee that proposals, bids or actual construction costs will not vary from this or subsequent cost estimates. Hanscomb has prepared this estimate in accordance with generally accepted principles and practices. Hanscomb's staff is available to discuss its contents with any interested party.

3.7 Ongoing Cost  
Control:

Hanscomb recommends that the Owner and design team carefully review this document, including line item description, unit prices, clarifications, exclusions, inclusions and assumptions, contingencies, escalation and mark-ups. If the project is over budget, or if there are unresolved budgeting issues, alternative systems/schemes should be evaluated before proceeding into the next design phase.

Requests for modifications of any apparent errors or omissions to this document must be made to Hanscomb within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

It is recommended that a final update estimate be produced by Hanscomb using Bid Documents to determine overall cost changes that may have occurred since the preparation of this estimate. The final updated estimate will address changes and additions to the documents, as well as addenda issued during the bidding process. Hanscomb cannot reconcile bid results to any estimate not produced from bid documents including all addenda.

**4. GROSS FLOOR AND SITE DEVELOPED AREAS**

---

**GROSS FLOOR AREA:**

<b>Description</b>	<b>New Addition (m2)</b>	<b>Renovation (m2)</b>	<b>Total (m2)</b>
Main Floor	1,053	2,321	3,374
Mezzanine	144		144
<b>TOTAL</b>	<b>1,197</b>	<b>2,321</b>	<b>3,518</b>

The above areas have been measured in accordance with the Canadian Institute of Quantity Surveyors' Method of Measurement of Buildings by Area and Volume.

5. CONSTRUCTION COST ESTIMATE SUMMARY

COST SUMMARY:

		<b>Addition</b>	<b>Renovation</b>	<b>Total</b>
- New Construction		\$ 3,636,600		\$ 3,636,600
- Renovation			\$ 4,064,400	\$ 4,064,400
- Site & Ancillary Work		\$ 95,000	\$ 329,700	\$ 424,700
<b>Total- Including Site</b>		<b>\$ 3,731,600</b>	<b>\$ 4,394,100</b>	<b>\$ 8,125,700</b>
- General Requirements	6.0%	\$ 223,900	\$ 263,600	\$ 487,500
- Fee	3.0%	\$ 118,700	\$ 139,700	\$ 258,400
<b>Total- Excluding Contingencies</b>		<b>\$ 4,074,200</b>	<b>\$ 4,797,400</b>	<b>\$ 8,871,600</b>
- Design and Pricing Allowance	15.0%	\$ 611,100	\$ 719,600	\$ 1,330,700
- Escalation Allowance	1.5%	\$ 70,300	\$ 82,800	\$ 153,100
- Construction Allowance		Excluded	Excluded	Excluded
<b>Total- Including Contingencies</b>		<b>\$ 4,755,600</b>	<b>\$ 5,599,800</b>	<b>\$ 10,355,400</b>
- Goods & Services Tax		Excluded	Excluded	Excluded
<b>Total Construction Estimate</b>		<b>\$ 4,755,600</b>	<b>\$ 5,599,800</b>	<b>\$ 10,355,400</b>

**Appendix  
A - DETAILED ELEMENTAL COST ESTIMATE**

<b>Project</b> : Monterey School	Report Date : 22nd Dec. 14		
<b>Location</b> : Winnipeg, MB	Page No. :		
<b>Owner</b> : Lous Riel School Division	C.T. Index :		
<b>Consultant</b> : NumberTen Architects	Bldg. Type : 710	GFA : See below	
<b>Description of Project:</b> Building footprint 1,053m2, Main Floor GFA 1,053m2, Mezzanine 144m2, Total GFA 1,197M2	<b>Class D Estimate</b> <b>22nd December 2014</b> <b>GFA : 1,197 m2</b>		
<b>ELEMENT</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total</b>
<b>A SHELL</b>	1,197 m2		\$2,050,800
<b>A1 SUBSTRUCTURE</b>			447,500
A11 Foundations (pile caps, grade beams etc)	1,053 m2	205.00	215,865
A12 Basement Excavation	0 m3	-	0
A13 Special Conditions (piles, deatering etc)	1,053 m2	220.00	231,660
<b>A2 STRUCTURE</b>			494,800
A21 Lowest Floor Construction	1,053 m2	245.00	257,985
A22 Upper Floor Construction	144 m2	365.00	52,560
A23 Roof Construction (composite roof deck)	1,053 m2	175.00	184,275
<b>A3 EXTERIOR ENCLOSURE</b>			1,108,500
A31 Walls Below Grade	0 m2	-	0
A32 Walls Above Grade	1,071 m2	565.38	605,441
A33 Windows & Entrances	63 m2	861.43	54,270
A34 Roof Covering	1,053 m2	330.00	347,490
A35 Projections	1,197 m2	84.64	101,320
<b>B INTERIORS</b>	1,197 m2		\$800,700
<b>B1 PARTITIONS &amp; DOORS</b>			315,100
B11 Partitions	760 m2	308.53	234,480
B12 Doors	31 No.	2,600.00	80,600
<b>B2 FINISHES</b>			365,500
B21 Floor Finishes	1,197 m2	130.91	156,700
B22 Ceiling Finishes	1,197 m2	77.07	92,250
B23 Wall Finishes	2,551 m2	45.68	116,526
<b>B3 FITTINGS &amp; EQUIPMENT</b>			120,100
B31 Fittings & Fixtures	1,197 m2	60.37	72,260
B32 Equipment (basketball back stops etc)	1,197 m2	40.00	47,880
B33 Elevators	0 No.	-	0
B34 Escalators	0 No.	-	0
<b>C SERVICES</b>	1,197 m2		\$785,100
<b>C1 MECHANICAL</b>			479,300
C11 Plumbing & Drainage	1,197 m2	75.21	90,029
C12 Fire Protection	1,197 m2	30.89	36,979
C13 HVAC	1,197 m2	251.11	300,575
C14 Controls	1,197 m2	43.20	51,710
<b>C2 ELECTRICAL</b>			305,800
C21 Service & Distribution	1,197 m2	47.77	57,181
C22 Lighting, Devices & Heating	1,197 m2	106.92	127,983
C23 Systems & Ancillaries	1,197 m2	100.76	120,610
<b>NET BUILDING COST - EXCLUDING SITE</b>			<b>\$3,636,600</b>
<b>D SITE &amp; ANCILLARY WORK</b>			\$95,000
<b>D1 SITE WORK</b>			95,000
D11 Site Development	1 Sum		30,000
D12 Mechanical Site Services	1 Sum	-	20,000
D13 Electrical Site Services	1 Sum	-	44,960
<b>D2 ANCILLARY WORK</b>			0
D21 Demolition	Sum	-	0
D22 Alterations	Sum	-	0
<b>NET BUILDING COST - INCLUDING SITE</b>			<b>\$3,731,600</b>
<b>Z GENERAL REQ'S &amp; ALLOWANCES</b>			\$1,024,000
<b>Z1 GENERAL REQ'S &amp; FEE</b>			342,600
Z11 General Requirements	6.0%		223,900
Z12 Fee	3.0%		118,700
<b>TOTAL CONSTRUCTION ESTIMATE -EXC. CONTINGENCIES</b>			<b>\$4,074,200</b>
<b>Z2 ALLOWANCES</b>			681,400
Z21 Design & Pricing Allowance	15.0%		611,100
Z22 Escalation Allowance	1.5%		70,300
Z23 Construction Allowance	0.0%		
<b>TOTAL CONSTRUCTION ESTIMATE -INC. CONTINGENCIES</b>			<b>\$4,755,600</b>
<b>GOODS &amp; SERVICES TAX</b>			0
<b>TOTAL CONSTRUCTION ESTIMATE</b>	1,197 m2	<b>3,972.93</b>	<b>\$4,755,600</b>

<b>Project</b> : Monterey School <b>Location</b> : New Construction - Renovation to existing Winnipeg, MB		<b>Report Date</b> : 22nd Dec. 14 <b>Page No.</b> : <b>C.T. Index</b> :	
<b>Owner</b> : Lous Riel School Division <b>Consultant</b> : NumberTen Architects		<b>Bldg. Type</b> : 710 <b>GFA</b> : See below	
<b>Description of Project:</b> Renovation to 2,321m2 of existing interior space and replacement of exterior doors and windows		<b>Class D Estimate</b> <b>22nd December 2014</b> <b>GFA :</b> 2,321 m2	
<b>ELEMENT</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Total</b>
<b>A SHELL</b>	2,321 m2		\$914,600
<b>A1 SUBSTRUCTURE</b>			0
A11 Foundations (pile caps, grade beams etc)	0 m2		0
A12 Basement Excavation	0 m3		0
A13 Special Conditions (piles, deatering etc)	0 m2		0
<b>A2 STRUCTURE</b>			0
A21 Lowest Floor Construction	0 m2		0
A22 Upper Floor Construction	0 m2		0
A23 Roof Construction (composite roof deck)	0 m2		0
<b>A3 EXTERIOR ENCLOSURE</b>			914,600
A31 Walls Below Grade	0 m2	-	0
A32 Walls Above Grade	1,016 m2	50.00	50,800
A33 Windows & Entrances	149 m2	796.85	118,730
A34 Roof Covering	2,321 m2	260.81	605,330
A35 Projections	2,321 m2	60.19	139,700
<b>B INTERIORS</b>	2,321 m2		\$1,168,000
<b>B1 PARTITIONS &amp; DOORS</b>			390,100
B11 Partitions	1,114 m2	231.16	257,510
B12 Doors	51 No.	2,600.00	132,600
<b>B2 FINISHES</b>			465,200
B21 Floor Finishes	2,321 m2	71.91	166,895
B22 Ceiling Finishes	2,321 m2	78.06	181,170
B23 Wall Finishes	3,238 m2	36.18	117,140
<b>B3 FITTINGS &amp; EQUIPMENT</b>			312,700
B31 Fittings & Fixtures	2,321 m2	134.73	312,710
B32 Equipment	2,321 m2	-	0
B33 Elevators	0 No.	-	0
B34 Escalators	0 No.	-	0
<b>C SERVICES</b>	2,321 m2		\$1,981,800
<b>C1 MECHANICAL</b>			1,388,900
C11 Plumbing & Drainage	2,321 m2	128.26	297,702
C12 Fire Protection	2,321 m2	38.78	90,007
C13 HVAC	2,321 m2	388.15	900,893
C14 Controls	2,321 m2	43.20	100,267
<b>C2 ELECTRICAL</b>			592,900
C21 Service & Distribution	2,321 m2	47.77	110,874
C22 Lighting, Devices & Heating	2,321 m2	106.92	248,161
C23 Systems & Ancillaries	2,321 m2	100.76	233,864
<b>NET BUILDING COST - EXCLUDING SITE</b>			<b>\$4,064,400</b>
<b>D SITE &amp; ANCILLARY WORK</b>			\$329,700
<b>D1 SITE WORK</b>			97,000
D11 Site Development	1 Sum		96,950
D12 Mechanical Site Services	Sum	-	0
D13 Electrical Site Services	Sum	-	0
<b>D2 ANCILLARY WORK</b>			232,700
D21 Demolition	2,321 m2	100.26	232,710
D22 Alterations	Sum	-	0
<b>NET BUILDING COST - INCLUDING SITE</b>			<b>\$4,394,100</b>
<b>Z GENERAL REQ'S &amp; ALLOWANCES</b>			\$1,205,700
<b>Z1 GENERAL REQ'S &amp; FEE</b>			403,300
Z11 General Requirements	6.0%		263,600
Z12 Fee	3.0%		139,700
<b>TOTAL CONSTRUCTION ESTIMATE - EXC. CONTINGENCIES</b>			<b>\$4,797,400</b>
<b>Z2 ALLOWANCES</b>			802,400
Z21 Design & Pricing Allowance	15.0%		719,600
Z22 Escalation Allowance	1.5%		82,800
Z23 Construction Allowance	0.0%		
<b>TOTAL CONSTRUCTION ESTIMATE - INC. CONTINGENCIES</b>			<b>\$5,599,800</b>
<b>GOODS &amp; SERVICES TAX</b>	0.0%		0
<b>TOTAL CONSTRUCTION ESTIMATE</b>	2,321 m2	<b>2,412.67</b>	<b>\$5,599,800</b>

**Appendix  
B - DOCUMENTS & DRAWINGS LISTS**

**APPENDIX B – DOCUMENTS & DRAWINGS LISTS**

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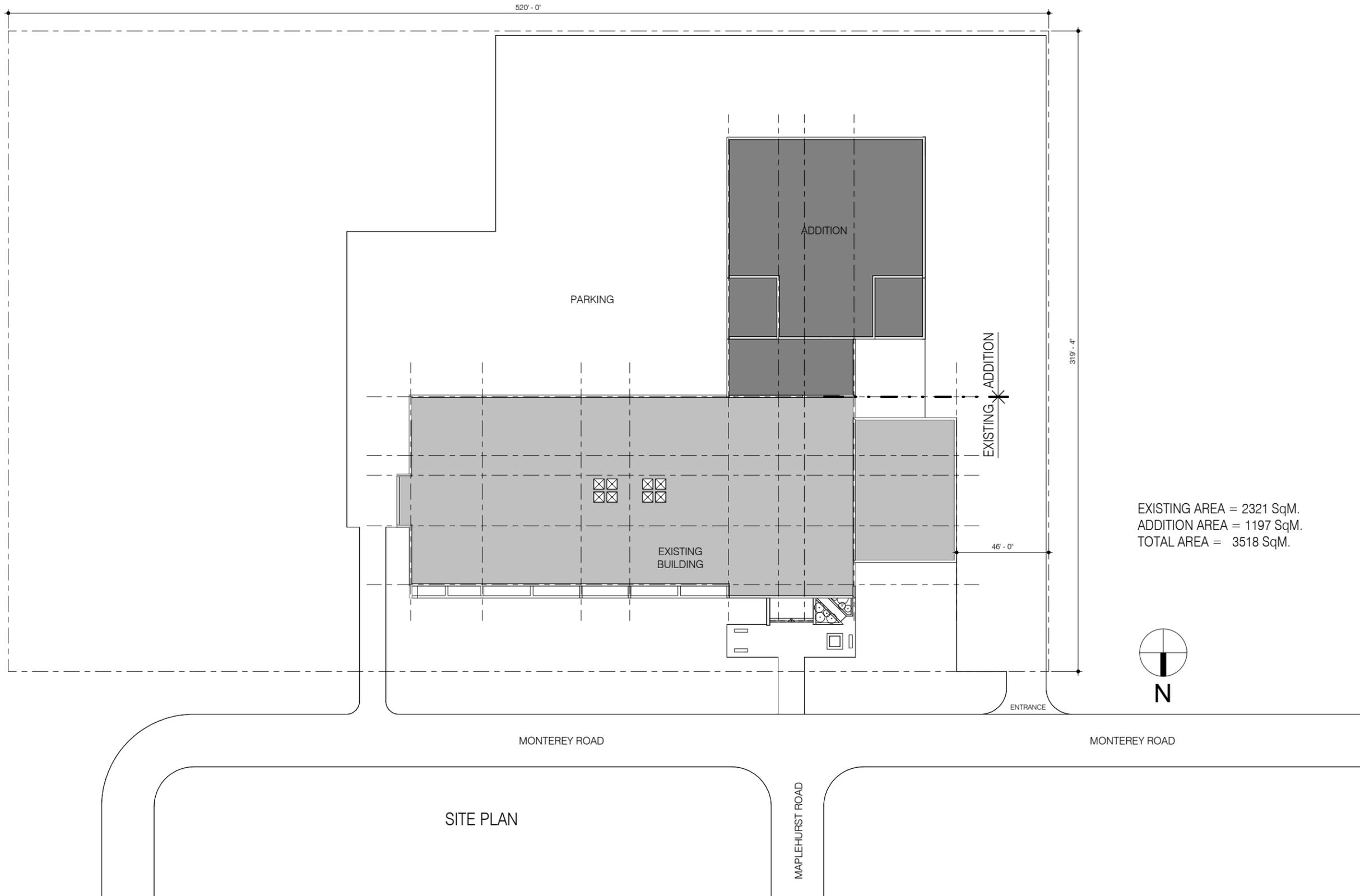
**DOCUMENTS**

Introduction dated November 28, 2014 received on December 15, 2014  
Architectural Report dated November 28, 2014 received on December 15, 2014  
Outline Specification dated December 15, 2014 received on December 15, 2014  
Room Schedule dated December 16, 2014 received on December 16, 2014

**DRAWINGS**

Drawings dated December 16, 2014 received on December 16, 2014 (6 pages)  
Original Blue Print Drawings received on December 16, 2014 (6 pages)

**Appendix  
C - REPRESENTATIVE DRAWINGS**

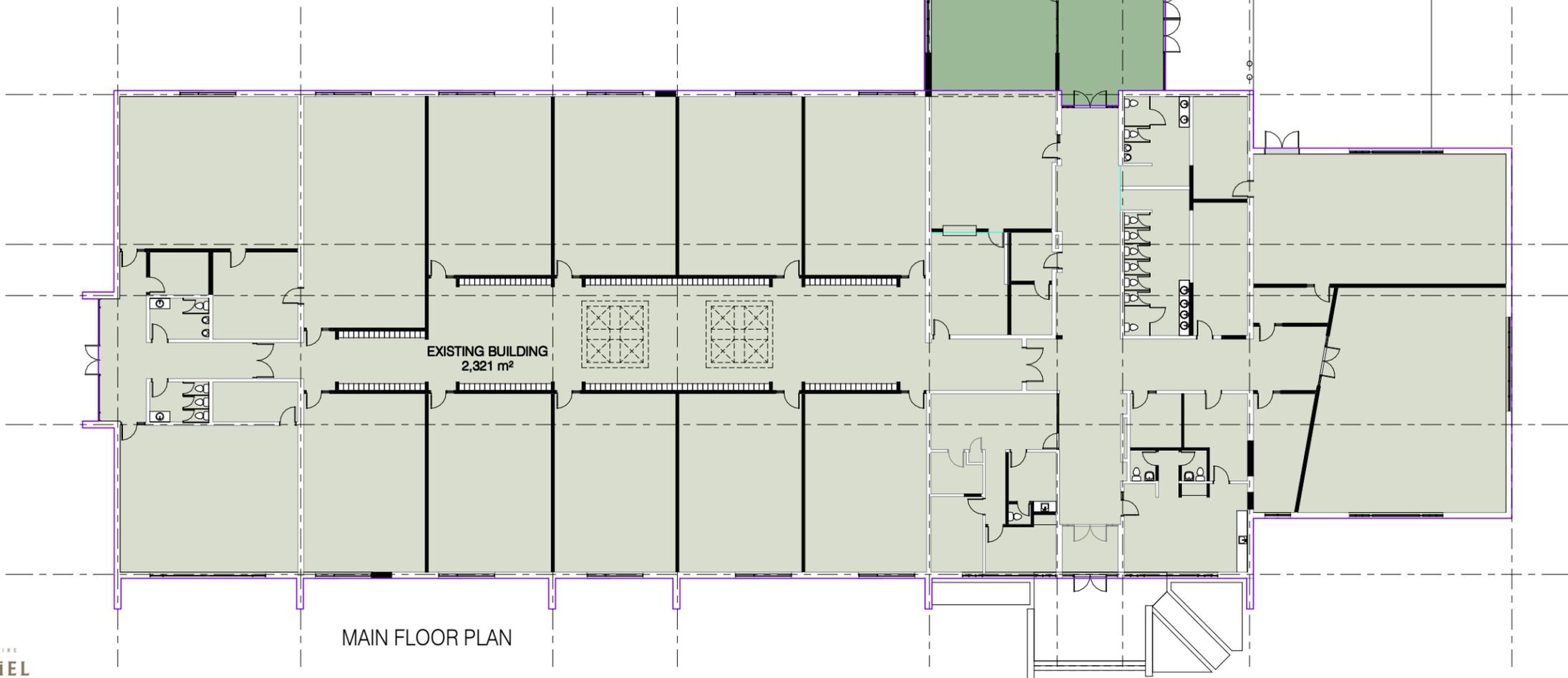
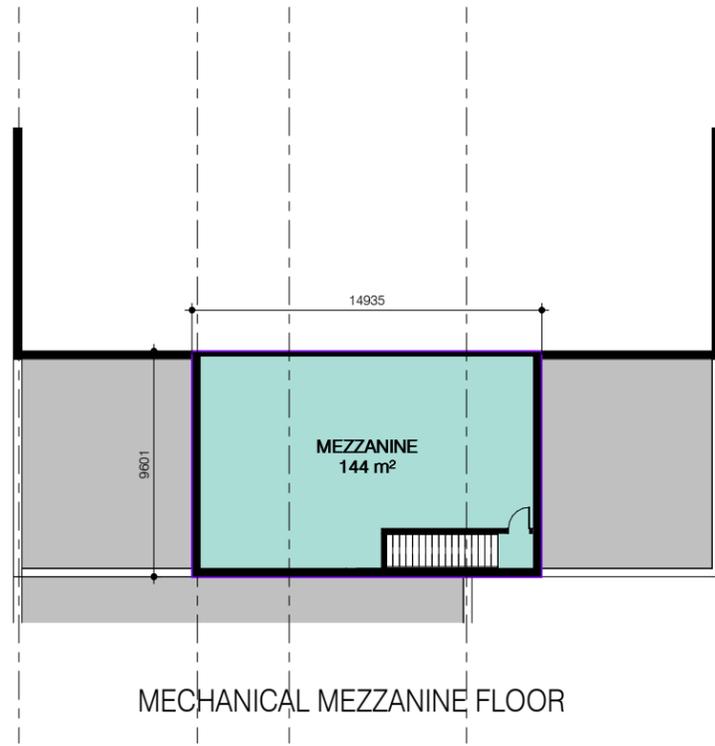


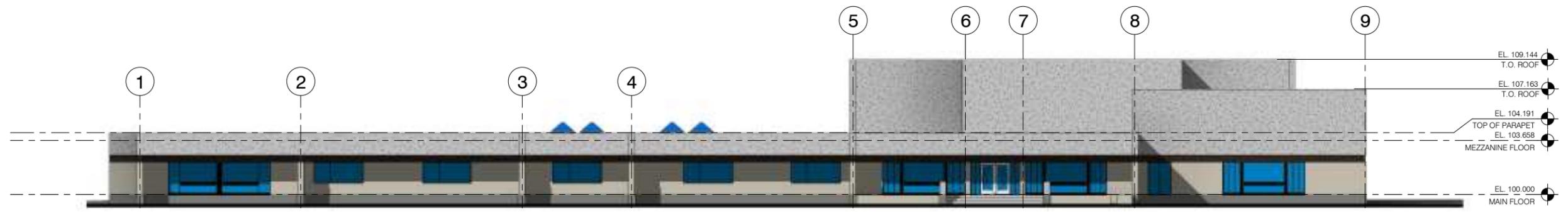
EXISTING AREA = 2321 SqM.  
 ADDITION AREA = 1197 SqM.  
 TOTAL AREA = 3518 SqM.



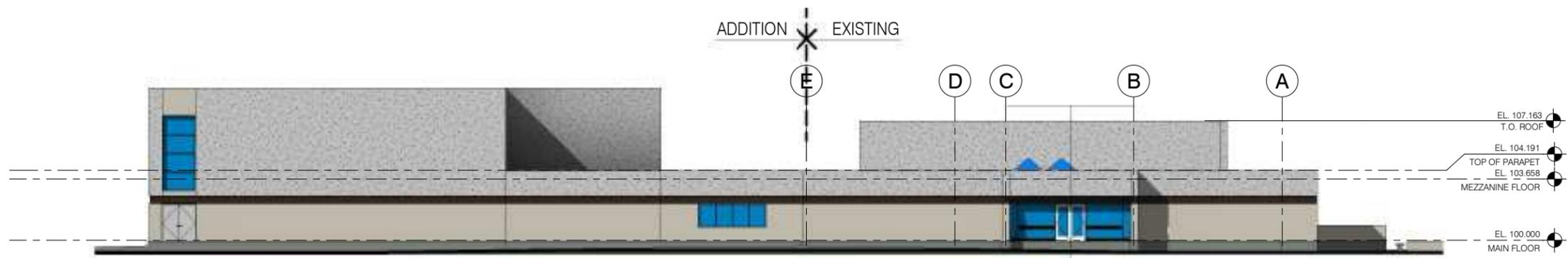
SITE PLAN

- GFA: Addition: Main Floor 1,053 m<sup>2</sup>
- GFA: Addition: Mezzanine 144 m<sup>2</sup>
- GFA: Renovation: Main Floor 2,321 m<sup>2</sup>

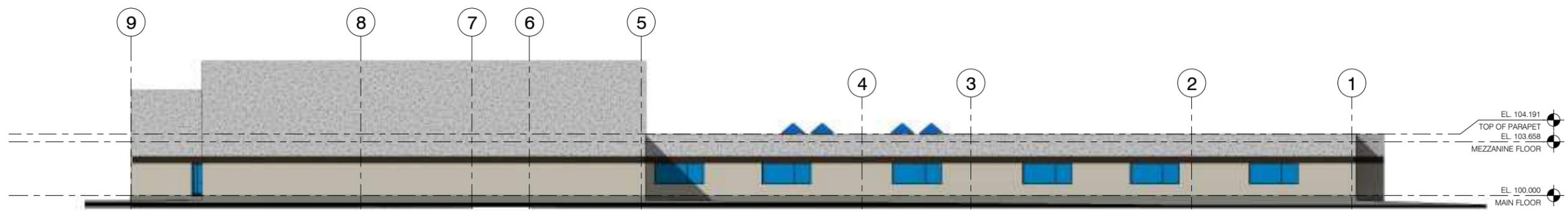




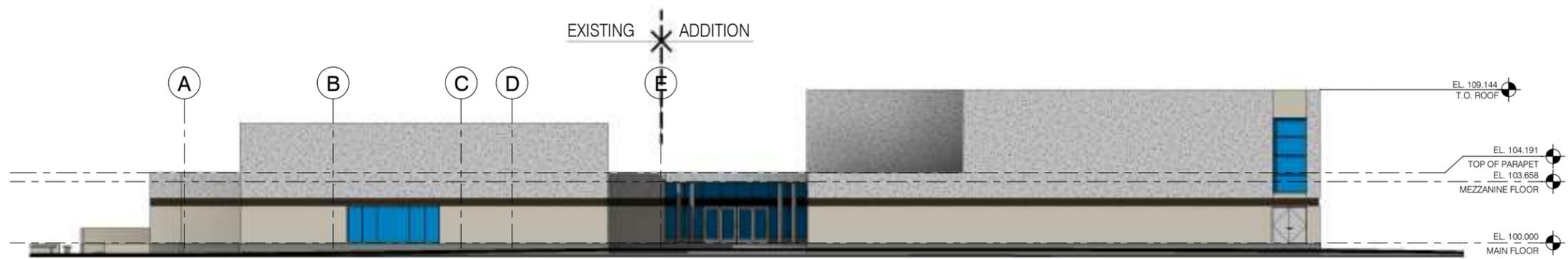
NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



WEST ELEVATION